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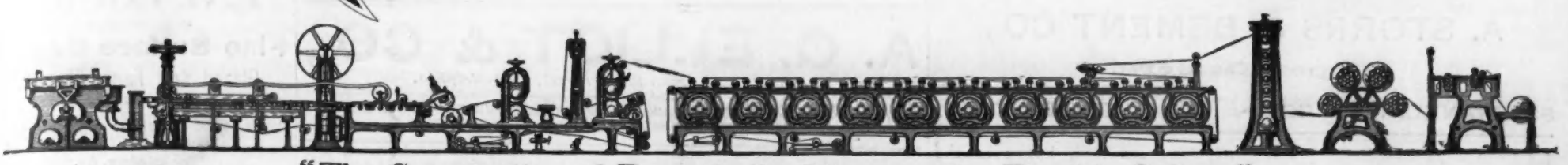


"The Consumption of Paper is the Measure of a People's Culture."

VOLUME XX.—NO. 46. NEW YORK, NOVEMBER 14, 1891. WHOLE NUMBER 915.

Trade Topics.

Caseine Sizing.

[WRITTEN FOR THE JOURNAL.]

BY GEORGE VINING, M. D.

I am confident that if the consumers of paper were familiar with the superiority of caseine to gelatine as a sizing for paper they would demand paper thus sized; but the consumer, not understanding its superiority, cannot consistently demand it of the paper maker, and in consequence the dealer does not demand it of the manufacturer. It would therefore appear that the paper manufacturer is deficient in judgment or enterprise in taking a progressive step in the manufacture of paper. His motto seems to be cost and not quality of production. It is reasonable to consider the cost of production, but not at the expense of quality, and when a superior quality of paper can be produced at the same or less cost than an inferior article it indicates want of ability to discriminate or an adherence to traditional practice in manufacture which blindly, if not ignorantly, excludes improved methods and the possibility of an improved product.

The experience of Henry Fourdrinier is only one of many illustrations that advanced steps are not as a rule taken until they become a necessity, and then the adoption is enlarged by some glowing remarks about progress in the manufacture of paper, while the fact of compulsion from necessity, for either quality or quantity of product, is ignored. It is right that a healthy degree of conservatism should be entertained, but when practical demonstrations repeatedly prove that new methods are right or superior, and that older notions are wrong or inferior, and still the new method is excluded in practice, it indicates deficiency somewhere.

I was first addressed on the subject of sizing by a superintendent of a mill who stated that if a man could find something as good as animal size from hides he would not only have a fortune but his discovery would be accepted by the paper makers, and was told that it had been tried by all men abroad and here, but the effort was a signal failure. I did not believe it impossible, and began my labors with the perfect faith that there was a body or combination, organic or inorganic, which would prove satisfactory, and working at intervals of time for fourteen years—months at a time at the bench—I am of the opinion that no man in the world ever tested the variety of material that I did during that time for the purpose. I found it more of a problem than I anticipated, and I would not undertake again under like conditions such labor. With water leaf always at hand the quality of any substance could be tested for sizing.

Caseine can be used in the beating engine or as a tub sizing; it gives better color, as it does not loosen the water leaf; as to the ink test and finish, it is superior; it does not cockle on the poles in the drying loft; it works better and cleaner on the machine; it does not foam as paper is run through it, and the paper runs safer through the calenders; it can be dipped into boiling hot water (which would remove gelatine size) and then dried, and it will hold the ink as well as before it was wet. This last qualification alone for state papers, records, deeds, insurance and other valuable documents, which time and liability to moisture might otherwise destroy, is a great desideratum. Photographs can be successfully taken on it when a paper is made fine enough and on a sufficiently fine wire cloth to meet the demands of the artist. The producer of a dry caseine gives the paper manufacturer a benefit at the same price of hides, because every ton of caseine adds a ton to the paper, while hides lose from 15 to 25 per cent. from residual matter. Within twenty-four hours a size maker who converts 2 tons of hides per week into sizing told me that he had about 400 pounds per ton of waste from each ton to dispose of.

About 9,000 tons of animal sizing per year are used, and with such a shrinkage there would be a loss of 800 tons each year from residual matter; therefore, pound for pound, as a dry stock which goes with and is dried and sold as paper, caseine offers a large inducement at the same cost per thousand.

I first tried caseine in the beating engine at Harrison Garfield's little historic mill at Lee, Mass., which was the first to use a tub size roll. The result was that it did not size the paper well, and when it went over the dryer it smelt like the urine of cattle. Naturally this would seem to be a death sentence, but I did not understand caseine as well as now, or as well as some claim since, who, in fact, know little or nothing about it. It took me over two months to find an absolutely sure way to dispose of the odor referred to, and now it is as sweet as the milk on the breakfast table. I subsequently sized in the tub in four mills and once in the beating engine, and in each instance successfully. These experiments were in small one or two barrel lots of sizing.

The next step was to size 18,125 pounds of paper taken from the drying poles running about five days and nights, all closely watched. I tested it from time to time, for it is not reasonable to suppose that a paper maker would size over 9 tons of paper with caseine or any other size which would compel him to throw away his paper. I inclose a specimen of that paper. Arrangements were made for the organization of a company for the production of caseine conditional on a trial of its qualities. The trial was had, and after waiting for the paper to dry I called for a decision and got it. "We hardly dare trust our reputation on it. The paper is fairly sized, but not quite well enough." Four years later and prior to another trial I showed the same man some of the same paper on which he would not risk his reputation, and he pronounced it sized "well enough." So much for inability to judge of a matter of fact, but the opinions of such people rule facts out.

(To be continued.)

Manufacture of Alkaline Carbonate and Chlorine.

This is a conjoint process for continuously producing alkaline carbonates, chlorine and their derivatives.

The formation of the alkaline carbonate is based on the decomposition of an alkaline nitrate by heating with calcic carbonate, as described by Lunge, the process including, however, the regeneration of the nitrate with the formation of a metallic chloride and the production therefrom of chlorine.

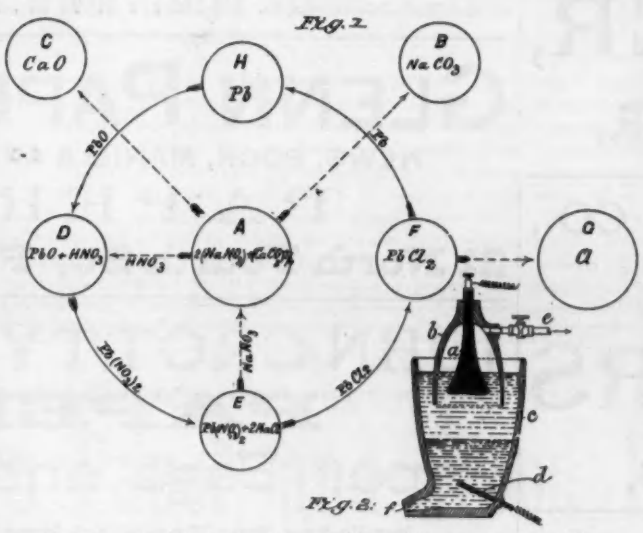
The regeneration of the alkaline nitrate is effected by the conversion of the recovered nitric acid into a solution of plumbic nitrate, which on being precipitated with a solution of sodic chloride will yield a solution of the alkaline nitrate and a precipitate of metallic chloride. From this chloride, while in a fused state, chlorine is produced by electrolysis, the metal recovered being oxidized for the formation of more plumbic nitrate, and so on, repeatedly.

Figure 1 is a diagram illustrating the cycle of operations, the circles designated by reference letters not indicating apparatus, but the materials in the various stages of the process; Fig. 2 is a vertical sectional view of the electrolyzing apparatus.

Starting at A, Fig. 1, sodic nitrate mixed with calcic carbonate in the proportions of two equivalents of the former to two and one-fourth equivalents of the latter is heated until it is completely decomposed, the sodic carbonate formed then being lixiviated out and going to B, while the lime remaining goes to C. The reaction which takes place at A may be expressed as follows:

$$2NaNO_3+CaCO_3=NA_2CO_3+2NO_2+CaO+O.$$

If only a small amount of water is employed in this lixiviation, sodic carbonate will be extracted. If a large amount of water is used, the sodic carbonate will on heating be converted into caustic soda with regeneration of the chalk. The nitrous fumes evolved during this decomposition are passed into a suitable chamber, where they are submitted to the simultaneous action of air or oxygen and water, and thus become converted into aqueous nitric acid. This operation is not illustrated on the diagram.



PROCESS AND APPARATUS FOR THE MANUFACTURE OF ALKALINE CARBONATE AND CHLORINE.

Litharge or massicot is then dissolved in this nitric acid—say at D—and the plumbic nitrate so formed is then precipitated as plumbic chloride by the addition of a solution of sodic chloride (brine) at E. The plumbic chloride thus formed after being washed and dried is fused and decomposed electrolytically at F, to produce chlorine, which goes to G, and metallic lead, which goes to H, for the regeneration of the oxide (litharge or massicot) to be used again at D. The sodic nitrate formed at E at the same time as the plumbic chloride is evaporated and so recovered from its solution for use over again at A with more calcic carbonate for the regeneration of nitric acid for continuing the operation.

The decomposition of the plumbic chloride by electrolysis is effected in the manner illustrated in Fig. 2. This electrolytical method affords an easy way of generating chlorine without the assistance of an oxidizing agent. The anode *a* should be composed of graphite or other material unattackable by chlorine, and the operation should be conducted in a bell or closed vessel, *b*, from which if conductive, the anode should be insulated. This bell *b* dips into fused plumbic chlorine contained in a vessel, *c* (which is kept heated in any suitable manner), while the anode *a* is also immersed in the same salt. The bell *b* and vessel *c* may be of enameled iron, or be lined with or composed wholly of graphite or earthenware. The cathode *d* may pass in at the bottom of the vessel *c* and be made of iron, tinned to insure good electrical contact.

The anode and cathode being in connection with the terminals of a suitable source of electricity producing a current of low tension and the temperature of the fused chloride being higher than that of molten lead, the fused metal resulting from the decomposition of the chloride by the electric current will collect at the bottom, and, surrounding the cathode, will virtually form a cathode of large area, while the chlorine also generated by the electrolysis of the chloride will rise in the bell *b* and pass out through pipe *e* to a receiver. The molten metal being drawn off from below through the opening *f*, while fresh chloride is added to the fused chloride above, the process is rendered continuous. The lead so obtained is to be oxidized into massicot in the ordinary way for further treatment at *d*, with the regenerated nitric acid coming from *c*.

How to Test Glycerine.

[WRITTEN FOR THE JOURNAL.]

In manufacturing chromo and all coated papers glycerine plays quite an important part, as it also does in almost every color mixing operation, for whatever industry the colors may be intended. There are, moreover, glycerines and glycerines, some suitable and others unsuitable for the purposes to which they are applied.

A great deal of the glycerine imported as refined is really very impure, being simply the product from soapmaker's waste lyes, which has been decolorized so as to present a fictitious appearance of purity. Besides the usual mechanical purification (settling and filtering) all glycerine intended to be used for color making and other delicate purposes ought to be distilled carefully in vacuo, this operation removing almost all impurities.

To determine in the first place whether any given sample of glycerine has been refined at all 10 grams are placed in a platinum dish and heated in a draught closet over a good Bunsen lamp. When a certain temperature has been reached the glycerine will ignite and continue to burn after removing the lamp until only a small residue is left. The amount of this residue at once distinguishes between crude and refined glycerine, whether merely a superficial bleaching process has been employed or if proper refining has taken place by distillation, &c.

Distilled glycerine never contains more than 1 per cent. of matter yielding this carbonaceous residue and generally less than half this quantity, unless there is some other impurity present which would be detected by one or the other of the further tests given in this note. Crude and unrefined glycerine may show as much as 10 per cent. of carbonaceous residue. The ash test is made by burning the weighed carbonaceous residue to whiteness over a blast lamp and noting the decrease in weight. Pure glycerines never give more than a fraction of 1 per cent. of ash.

If 5 cubic centimetres of glycerine are diluted with 20 cubic centimetres of distilled water, and then 5 cubic centimetres of a 2 per cent solution of neutral silver nitrate are added, there ought only to be a very slight precipitation. If the glycerine is not refined the precipitate will subside rapidly and be flocculent.

A similar and equally useful test is that with acetate of lead. The testing solution is prepared by boiling 10 grams of lead acetate with 8 grams of litharge and 500 cubic centimetres of distilled water.

One volume of the glycerine to be tested is mixed with two volumes of the test solution; also one volume of distilled water, and the mixture is allowed to stand for one hour. The same remarks apply to this as to the silver test.

Any sample of glycerine which will not satisfactorily stand these two tests may be unhesitatingly condemned as crude and unrefined, and hence unsafe to use for delicate color mixing and even in finishing textiles. Oily and fatty matter is tested for by dilution with an equal volume of distilled water. It shows up at once when the glycerine has dissolved in the water. Iron oxide and alumina are tested for by supersaturating with strong liquor ammoniae.

The addition of a solution of oxalate of ammonia shows the presence of lime salts by a copious white precipitate of lime oxalate. Barium chloride solution shows the presence of sulphates in a similar manner. Some glycerines contain a certain quantity of greasy matter which does not separate out on dilution. This can be tested for by a solution of nitrous fumes in water, which will curdle any fatty matter.

Common glucose is often used to adulterate glycerine. This is detected by boiling a small quantity, previously diluted with water, with Fehling's solution. A copious red precipitate shows the presence of glucose. Glycerines used for color making and the manufacture of coated papers should be neutral or almost so, which can be tested for by means of litmus paper.

If the above described tests are applied to all glycerines before allowing them to go into use in the mill much spoiled work will be avoided and blame, often placed on the coloring matters used, will be directed to the right quarter.

Hints for Millwrights and Mill Owners.

[WRITTEN FOR THE JOURNAL.]

BY JAMES F. HOBART.

Little has been heard of late concerning rope drives for paper mills. Rope driving, like grasshoppers, appears to be periodical in its appearance; nevertheless there is a real, solid basis to work from when advocating the transmission of power by ropes, and it is a subject which should receive closer attention from paper manufacturers.

The pulleys used for rope power transmission are lighter than those used for belts; their increased diameter admits of a higher rate of speed for the ropes than could be given to belting. The cheapness of ropes is another argument in favor of their use, as is also the ease with which they may be spliced.

It is not only possible but economically practicable to run rag and beating engines by ropes. It is only a few years ago that belts for this purpose superseded several tons of iron in the shape of gears; it will be but a few more years before the belts are laid away with the old mitre gears, and hemp roping will do all the work at much less cost for installation and operation.

There are several ways of making a long splice in a rope or cable. A very good way for splicing ropes used for driving machinery is to first unlay each end for as many turns as there are threads in each strand. The ends are then "crotched"—that is, the two ends of the rope are brought together, and the ends laid are passed to the others, so that they lie regularly and symmetrically. One strand is then unlaid out of the main part of the rope and the strand which is to be put in its place is laid in. This should be done without any reduction of size, neither should the rope be tapering or in any way changed by the substitution of one fold for another.

When at a sufficient distance from the splice the two ends are half cut off, and the other halves are tied together and tucked in between the strands of the rope. This method is followed with each pair of strands until they are all substituted for each other, tied together and tucked away in the inside of the rope.

Another method consists of systematically tapering each strand. Half as many turns

(*Continued on page 1011.*)

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(Continued from first page.)

of both ropes are unlaid as there are threads in the strand, counting backward from the place where each two strands are to meet. Suppose a rope to be spliced has six threads in a strand, or that it is "18 thread stuff." Then each pair of strands is unlaid, three turns counting backward from the place of meeting; at that point a single thread is cut and removed. The strands are then laid up, each one more turn and a second thread is removed. One more turn brings them together and a third thread is cut out of each, leaving each one of half the original thickness.

Here they are twisted together and tied, a right handed knot being used. This method of knotting and consequent doubling of the reduced strands maintains the original thickness of the rope. The ends of the loose strands are again passed around the laid up tapered strand until the next turn is reached; then one additional thread is cut, leaving two. This reduced portion of the strand is twisted around the laid strand, which is five threads in thickness. The twisted portion is finally cut off. This leaves the strands in all places the exact thickness of six threads.

There is another way of tapering the strand before it is laid, but this method is too complicated to be described without the use of engravings.

Correspondence.

Fox River Notes.

[FROM OUR REGULAR CORRESPONDENT.]

APPLETON, Wis., November 1, 1891

Some time ago the Neenah Water Power Company appointed a committee consisting of S. A. Cook, of Neenah, and G. F. Steele and T. W. Orbison, of Appleton, to investigate the feasibility of storing water in the upper sources of the Wolf River, from which Lake Winnebago and the Fox River are supplied, to be let down as occasion may demand to replenish the Fox River at times of drought and low water like the present. The gentlemen named made a two weeks' exploration of the region where it is proposed to locate the reservoirs, and in a report prepared and submitted recently to the Neenah Water Power Company they pronounced the scheme perfectly practicable. A meeting of the water power owners, up and down the river, will soon be called to discuss and take action upon the matter. The committee reported that by an expenditure of about $75,000 reservoirs could be erected which would, for example, increase the power on the second dam at Appleton 650 horse power. As this is a 10 foot level, and as the entire fall of the river is 140 feet, the total increase of power thus gained would be 9,100 horse power.

Several of the paper manufacturers of this valley would put in engines if they could be delivered in any reasonable length of time, but the steam engine builders are so rushed with work that they cannot contract for specified delivery. The Patten Paper Company, and the Fox River Paper Company will put in larger engines next year, in order to be prepared if any low water season similar to the present occurs again. The Neenah Paper Company is putting in a large steam engine, which will be ready to run in about ten days and will have power sufficient to actuate the entire plant. The Thilmany Paper and Pulp Mills, of Kaukauna, have ordered a 100 horse power engine, which they expect to receive in about fifteen days, and which will be used for running their paper machines. The rag engines will be run by water power, as heretofore. The 60 horse power engine for running the machines of the Fox River Paper Company has arrived and is now being set up in the new building prepared for it. The new building which is to contain the new 500 horse power engine of the Telulah Paper Company is completed, and portions of the engine have arrived and are being set up.

The Pulp Wood Supply Company will probably build this winter not only a fleet of large wood barges, but a powerful tug for towing them as well. The outfit will be able to deliver 200 cords of wood per day from De Pere to Appleton, and will cost about $16,000.

The new mills of the Wisconsin River Pulp and Paper Company, near Stevens Point, are being erected rapidly, and the pulp mill will be in operation in a few weeks. There will be eight "New England" grinders of an especially large size in the mill, and they will turn out 20 tons a day. The paper department will be ready to go into operation some time next spring.

The Wisconsin River region is probably about the only locality on the continent which is not troubled by lack of water power. The reason is that the water has been husbanded in the Eagle Lakes and not let down until this spring. This has been done by the lumbermen in order to raft logs, but the effects are most beneficial to manufacturers as well.

The report is well founded that the Pioneer Wood Pulp Company, of Grand Rapids, Wis., on the Wisconsin River, will build a paper mill next spring. It will make No. 2 manillas.

On account of their having ample facilities for making pulp at the Combined Locks the Van Nortwicks have just sold their Union Pulp Mill at Kaukauna to Frederick Barnett and Frank Loope. The mill has twelve pulp grinders and a fine record for large production.

The water has for a week past been shut out from the upper canal in this city and will be for several days longer while extensive repairs are in progress. The lower canal, also on the left bank of the river, has been undergoing similar improvements for several days past. The mills on those levels are of course shut down.

John Seemler, employed by the Manufacturing Investment Company, received a severe cut on the head last week by being struck by a block of wood falling upon him.

Orris Nichols, of Appleton, fell 30 feet to the ground from a scaffolding at the Stevens Point Paper Mill a few days ago and received very serious bruises about the head and limbs, but fortunately no bones were broken. He was brought home to recuperate.

Manager W. B. Murphy, of the Pulp Wood Supply Company, recently made some large contracts for pulp wood in the vicinity of Ishpeming, Mich.

Walter W. Mead, of Chicago, is in town.

F. J. McGovern, of Albany, N. Y., was in this city on business recently.

FOX RIVER.

Western New York.

[FROM OUR REGULAR CORRESPONDENT.]

LOCKPORT, N. Y., November 18, 1891.

The great problem to manufacturers, and particularly to the paper and pulp trade, is how to utilize the vast power of Niagara Falls to the best advantage. It is apparently solved at last, and the transmission of electrical force for long distances without loss is clearly established. The Niagara Falls Tunnel Company is expending millions of dollars to develop a big power. The electrical question was submitted to Edison by the company, which paid him $40,000 for his opinion. It was favorable to the company and pronounced entirely feasible. Edison, however, did not devise a means for carrying that power, and it devolved upon the Germans to carry it into practice.

Latest advices from Germany to Dr. Richard Gratzel, the well-known electrochemist, of Hanover, who is now in this city, announce that an alternating current of electricity of 48,000 volts power has been successfully transmitted from Lauffen-on-the-Neckar to Frankfort-on-the-Main, a distance of 200 kilometres, or 110 miles. This took place on the evening of October 17 at the Grand Exposition at Frankfort. Said Dr. Gratzel: "As they have reached 48,000 volts there is scarcely any doubt but that 80,000 volts can be used and power transmitted from Niagara Falls to Chicago, New York, Boston, Philadelphia or other large manufacturing centres." One particular feature of this experiment was the perfect insulation obtained from a new porcelain insulator composed of three sections. The top is flat, with a deep groove in which rests the wire. Underneath is a saucer shaped receptacle and below this two more, each of larger breadth and depth than the preceding one, and all three filled with oil, thus giving a perfect insulation of one part from the other.

The paper and pulp business in Western New York is rushing where mills have not been interfered with by a scarcity of water. Where this is low manufacturers might as well suspend. Some of the "tall" language used by many of the representatives of the companies hereabouts would cause most creeks to dry up.

The improvements at the Cascade Pulp Mill and United Indurated Fibre plant are nearly completed. The new boilers and presses are in place and will be running next week. The local company, styled the Lockport Indurated Company, held a meeting of the old stockholders this week, and elected the following named officers: President, Jesse Peterson; secretary, Charles Folger; treasurer, Frank N. Trevor. The business of the company was never in such a flourishing condition.

Ex-Governor Cheney of New Hampshire one of the heavy stockholders of the United Indurated Fibre Company — in fact, the heaviest—was here recently as the guest of President Peterson, and made a personal examination of the mills, books and the plant of the company. Mr. Cheney was one of a committee appointed to visit the plant. He was highly pleased, as he expressed it to THE PAPER TRADE JOURNAL reporter. He also visited the pulp and paper mills at Niagara Falls, Rochester, Dansville and Middleport, and was greatly impressed with the extent of the pulp and paper business in this part of the State.

Mr. Peterson and family are in New York for a short sojourn this week.

I had a personal talk with John J. MacIntyre, the Niagara Falls pulp man, to-day. Mr. MacIntyre has a big scheme on foot to form a syndicate to handle pulp wood. It is said that extensive wood lands have been purchased in Canada. However, next week will probably mature his plans and the readers of THE JOURNAL will be the first to learn of the result. There are several other little surprises for the trade from the Falls which I hope to give them next week. At least I have the promise of being given the facts.

The reported sale of the Cliff Paper Company is pronounced incorrect by A. C. Hastings, manager of the company. A sale has been talked of, but has not been made.

C. H. Gilchrist, for several years the popular foreman of the well-known Quigley Pulp Mill, and lately of the Cliff Paper Company's mill, at Niagara Falls, has severed his connection with the latter and taken up his home at West Hebron, N. Y., to reside upon a stock farm which he purchased some time ago. "Charlie," as he is familiarly known, is a genial gentleman and will be greatly missed from the Cliff Paper Company. All of the "vets," and the young ones, too, of the trade will be welcomed at Gilchrist's pleasant farm quarters.

W. E. T.

Boston Notes.

[FROM OUR REGULAR CORRESPONDENT.]

EASTERN OFFICE PAPER TRADE JOURNAL,
67 Federal Street,
BOSTON, November 12, 1891.

Yesterday the sky darkened and clouds hung thick overhead; but the storm passed away and hopes were not realized.

From present observations the long drought is likely to continue for some days yet, and the longer this dry season lasts the more serious becomes the condition of the paper making industry.

Reports from the various paper making districts of New England are all of the same tenor as regards the water supply.

The natural water reservoirs are very low and the streams are drying up, so that the scarcity of water is seriously felt not only by paper makers, but by all lines of manufacturing depending upon water power.

Just how much the daily production of paper is being curtailed it is impossible to say, but the first result of lessened produc-

THE GLEN MFG. CO., OFFICE: 244 WASHINGTON STREET, BOSTON, THE HAVERHILL PAPER CO.,
News Paper and Wood Pulp.

HOLLINGSWORTH & VOSE, 44 FEDERAL ST., BOSTON, MASS.,
MANUFACTURERS OF
PURE MANILLA ROPE PAPER.
Z. T. HOLLINGSWORTH. Mills at West Groton and East Walpole, Mass. Daily Capacity, 25,000 pounds. CHARLES VOSE.

W. A. BINGHAM & CO., 186 & 188 FRANKLIN STREET, NEW YORK.
PAPER, PAPER BAGS, FLOUR SACKS, &c.

FRIEND & FORGY PAPER CO., Franklin, Ohio.
Manufacturers of PURE MANILLA ROPE PAPER. Daily Capacity 24,000 Pounds.

J. L. & D. S. RIKER, 45 CEDAR STREET, NEW YORK,
Importers and Manufacturers' Agents.
SOLE AGENTS FOR THE UNITED STATES AND CANADA
OF
THE UNITED ALKALI CO., Lim., of Great Britain,
FOR THE SALE OF THEIR VARIOUS BRANDS OF BLEACHING POWDER.

PERKINS, GOODWIN & CO.,
Nos. 66 and 68 DUANE STREET, NEW YORK,
Have on hand and to arrive all grades of Bleached and Unbleached
SULPHITE AND SODA PULPS. SEND FOR SAMPLES AND PRICES.

tion is already showing itself in higher prices.

As stated last week the Hollingsworth & Whitney Company advanced prices on its manilla paper a quarter of a cent and other manufacturers have since announced an advance.

Some manufacturers of tissue paper, it is said, are asking more and are getting advanced figures, too.

The consumption of paper seems to hold up well, every city jobber claiming to be doing a very fair business.

There is not a very heavy movement in paper stock, for reasons well understood, and so long as paper manufacturers are forced to curtail product because of a scarcity of water much improvement in this line of trade cannot be looked for. And yet the trade is not as dull as conditions would seem to warrant, from which fact importers reason that business will take a turn for the better just as soon as water becomes plenty. Prices are said to be very firm, locally and in foreign markets, even with lessened consumption in the home trade.

Nothing new presents itself in the chemical market, quotations remaining at last reported figures. While demand is light, the tone of the market is firm.

The imports of chemicals for the past seven days include 617 casks of bleaching powders, 575 drums of caustic soda, 154 casks of soda ash and 784 barrels of soda crystals.

Receipts of paper stock were 799 bales of rags, 61 bales and 106 coils of manillas, 2,428 bales of low grade stock and 719 bags of sizing.

C. T. Craig, of Henderson, Craig & Co., London, England, spent a few days of this week in Boston.

Other recent trade visitors were ex-Gov. P. C. Cheney, W. S. Holt and Frank P. Carpenter, of Manchester, N. H.; Col. A. G. Paine, C. A. Mortimer and Mr. Darnell, of New York; Frank F. Carpenter, of West Brook, Me.; Henry A. Emerson, of West Henniker, N. H.; George Wright, Jr., Mittineague, Mass.; John E. Clark, Geo. M. Castle and Henry R. Dickinson, of Holyoke; H. C. Hurlbut, of South Lee, Mass.; C. S. Mayo, of Lawrence, Mass., and F. C. Whitehouse, of Brunswick, Me.

Col. S. P. Train and the Hon. Henry R. Dickinson left town together yesterday on a fishing trip.

E. A. Stone, of Stone & Forsyth, is down on the Cape after game.

The Howland Falls Paper Company, of Howland, Me., manufacturer of sulphate fibre, has recently taken an office in this city. Geo. E. Keith is now the treasurer of the company and Charles Curtis is the selling agent, with office at No. 125 Kingston street.

Frank B. Comins, manager of the "Aerophor" paper dampener, was seen in town to-day. Mr. Comins is much pleased with the satisfactory results which the "Aerophor" is giving to paper manufacturers. It is certainly a device of much merit, and few inventions of late years are of more value to the trade than the "Aerophor" paper dampener, and no paper mill device is attracting more attention from manufacturers.

On Wednesday evening of the coming week will be held the "world's fair" meeting of the Boston Paper Trade Association, an event that is attracting considerable attention in paper trade circles.

Every effort is being made by the executive committee to make this meeting a success and an event of more than usual interest.

From the replies already received by Secretary Forsyth, the attendance at the Hotel Brunswick banquet will be very large.

The city trade will be there in full force, and a large delegation of out of town members will be present.

President Fitch and Secretary Waggoner, of the Chicago Paper Trade Club; Col. J. A. Frambach and Geo. E. Bardeen will be among the guests of the evening.

Among other distinguished guests who have promised to be at the meeting are Honorables F. N. Breed and T. E. Proctor, the national world's fair commissioners; George P. Ladd, alternate commissioner; Gen. J. W. Corcoran, president of the State commissioners, and Col. A. G. Bullock, commissioner at large from this State. Jerome Jones, president, and W. H. Sayward, secretary, of the Boston Business Executive Association will be among the guests of the evening.

The Boston Paper Trade Association has had several very notable meetings in the past, but the "world's fair" meeting of next week is expected to be the red letter event of the association. DELESDERNIER.

Holyoke Notes.

[FROM OUR REGULAR CORRESPONDENT.]

HOLYOKE, Mass., November 12, 1891.

Low water is still quite a factor in the manufacturing interests of this city. To-day the water is 4 or 5 inches below the flush boards, which means that none is running over the dam and will not till we have heavy and continued rains. It rained some yesterday, but not enough to make any material difference with the supply. The restrictions on the use of the water are still in force, and are likely to continue until relief comes in the shape of an extended rainfall. The week has been uneventful in business life, and while the product is somewhat curtailed the manufacturers are perhaps as well off; at any rate very little grumbling is indulged in. The mills are all busy on orders and the product is moving toward the market very evenly. Prices are unchanged.

D. H. & A. B. Tower, of this city, have just drawn plans for a stone dam for the Ashmear Company at Hinsdale. It will be 50 feet long and will be flanked by earth embankments. The reservoir, when filled, will furnish water for the mills along the stream as far as Lee. The water has heretofore been wasted, but when the reservoir is finished the mills will be greatly benefited.

The Fall Mountain Paper Company, which bought some 3,000 acres of land near Granville Mountain, Vt., has been clearing the river in order to float its logs to the White River. The work has advanced as far as Bethel and a reservoir is being built on the Tweed River to facilitate the work. This improvement will lessen the labor in the transportation of the logs.

The death of Uriah Blake, at one time one of the finest paper makers in this country, which occurred in this city this week, is another sad example of what an appetite for liquor will bring a man to. Mr. Blake formerly had charge of the Dickinson & Clark Paper Company's mill, but about four years ago went to Miamisburg, Ohio, where he put $10,000 into a mill and became its superintendent. The company went into insolvency and Mr. Blake lost all that he had invested. He was idle for some time, became despondent and made two or three attempts at suicide. He deserted his family, and the latter were finally sent to Holyoke, where they found friends who assisted them. A short time ago Blake suddenly appeared and lived with his family for a few weeks. He was found in an alley this week with $800 in his pockets and was taken to the almshouse, where he died.

George W. Tapley, of Springfield, broke ground a few days ago for an addition to the building on Willow street occupied by the Taylor & Tapley Manufacturing Company. It will be 80x50 feet, five stories high, and the material will be brick. It will be used mainly for the manufacture of cloth faced paper collars and cuffs. The Milton Bradley Company will occupy one floor and the company will use the four lower floors.

Holyoke is to put in her claim again for a Government building to cost about $150,000. The large increase in the postal business during the past five years is the main argument on which this claim is based, and another is that the business accommodations are totally inadequate. The plan for a new building was indorsed by Hons. William Whiting and Rodney Wallace when these gentlemen were in Congress. Lawrence, Brockton, Fitchburg, Medford and Newburyport are all pressing similar claims.

The stock of the Coburn Trolley Track Manufacturing Company is being rapidly taken by our capitalists and there will be none in the market by the latter part of the month.

Wade, Warner & Co., the Northampton publishers, are to publish a book entitled "Picturesque Hampden." It will consist of two volumes, one having Holyoke as its central figure and the other will make Springfield the prominent feature.

A strange fate seems to have pursued Alexander Fairgrieve, who was killed at the Nonotuck Paper Mill last week. While at work with his father in a coal mine in Scotland ten years ago the mine caved in and both were buried, but the younger man escaped with his life. He served in the English army and engaged in the Zulu war, having many narrow escapes from death. His wife had two brothers killed on the railroad, and Mr. Fairgrieve was finally the victim of a terrible accident.

Eagle Lodge of Paper Makers cleared about $200 from its recent annual ball. The proceeds will be used to establish a free reading room, with a modest library connected.

The employees of the Holyoke Envelope Company have just organized a very worthy society among themselves. It is a benevolent association for the purpose of assisting those who are disabled by sickness or accident.

The Albion Paper Company is to build a private bridge across the canal near its mill. F. A. Rivers has the contract for the work.

The Holyoke men who have been employed on the Ticonderoga Paper Company's new mill have returned to the city.

Jennie Shea, an employee of the Holyoke Envelope Company, had a foot injured by the elevator one day recently. H.

The Jeffrey Manufacturing Company, Columbus, Ohio, reports business as good in its different lines of specialties. It has many large orders on its books for elevators and conveyors for handling material in bulk or package, and has recently purchased a tract of land adjoining its present extensive works, on which it has erected a large and substantial brick building, that it may be better able to take care of its growing business.

Mortgages, Etc.

[In the appended list R. signifies a renewal of a pre-existing mortgage; B. S., bill of sale; and Real, a mortgage on real estate.]

EASTERN STATES.

Mortgagor.	*Amount.*
William Williams, Newport, R. I.	$500
Cyrus Arnold, Woonsocket, R. I.	6,300

MIDDLE STATES.

Burr & Kilmer, Gloversville, N. Y.	225
R. J. Wilson, Mt. Carmel, Pa. (Conf. J.)	100

WESTERN STATES.

W. A. Selkirk, Petaluma, Cal.	7,350
E. Ulbricht, Chicago, Ill.	132
Peoria *Evangel* Publishing Company, Peoria, Ill	800
T. Oxley, Jr., Centre Point, Ia.	150
Louis Stern, Keokuk, Ia.	5,000
J. M. Cavanes, Chetopa, Kan.	600
W. E. Savage, Detroit, Mich. (B. S.)	500
Peter H. Mayhew, Minneapolis, Minn.	137
L. E. Brown, Bertrand, Neb.	400
E. A. Hill & Wilson, Holdrege, Neb. (B. S.)	1,400
Leader Publishing Company, Seattle, Wash.	3,482
Charles Pomainville, Marinette, Wis.	8,000
Cream City Lithographing and Engraving Company, Milwaukee, Wis.	2,800
Frank Lebeau, Milwaukee, Wis.	1,852

LIENS DISCHARGED.

David King, Springfield, Ohio (Real)	2,300
David King, Springfield, Ohio (Real)	2,000

Fires.

Richard Talbot, publisher and printer, Tacoma, Wash., has suffered a loss from fire.

A. Rodemeyer, publisher of the *Fireside Guard*, Centralia, Mo., has suffered from fire.

The mill of the Dubuque Paper Company, Dubuque, Ia., was damaged $7,000 by fire on October 30.

Otto Roenicke, proprietor of the Oregon Paper Box Factory, Portland, Ore., has suffered a loss from fire of $500. Insured.

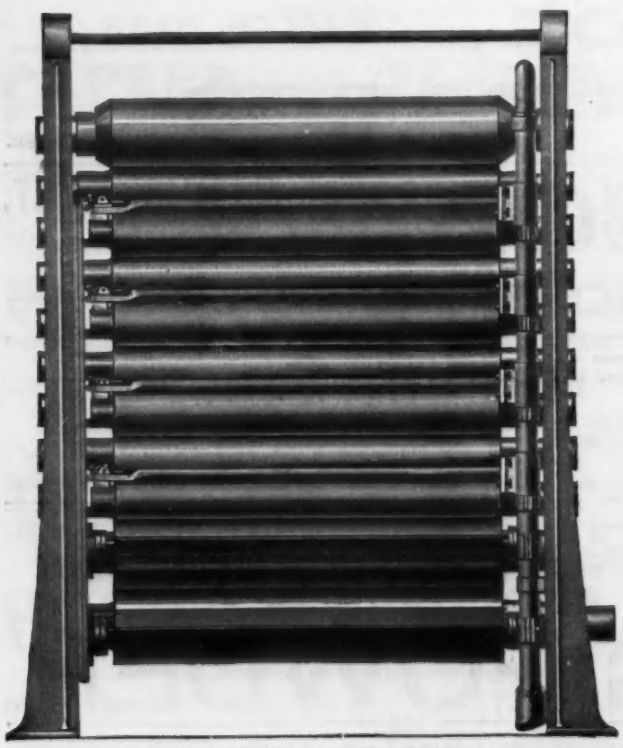
The stock of writing papers, envelopes, books and fancy goods owned by M. G. G. Butler, of Henderson, Tenn, was almost entirely destroyed in a recent fire.

In Town.

W. M. Crane and Z. Crane, Dalton, Mass.; Wellington Smith, Lee, Mass.; J. N. Mohr, Philadelphia, Pa.; W. T. Barker, H. M. Whitney and G. W. Wheelwright, Boston, Mass.; W. N. Sprague, Middle Falls, N. Y.; C. S. Mayo, Lawrence, Mass.; F. H. Parks, Glen Falls, N. Y.; J. E. Howland, J. H. Derby and L. M. Howland, Sandy Hill, N. Y.; J. C. Kenyon, Baldwinsville, N. Y.; C. H. Southworth, South Hadley Falls, Mass.; D. W. Post, Unionville, Conn.; Moses Newton and A. W. Esleeck, Holyoke, Mass.; W. A. Cole, Putney, Vt.; H. D. Cone, Housatonic, Mass.

SMITH'S PNEUMATIC CALENDER FEED.

Patented September 29, 1885; November 16, 1886; other Patents now pending. This Machine is also Patented in England, France and Germany.



Applied to Calender on the Machine.

THE DANGER TO PAPER MACHINE TENDERS and the LOSS IN BROKEN PAPER at the CALENDER ROLLS MAKE THIS INVENTION OF ESPECIAL VALUE FOR THE REASONS THAT:

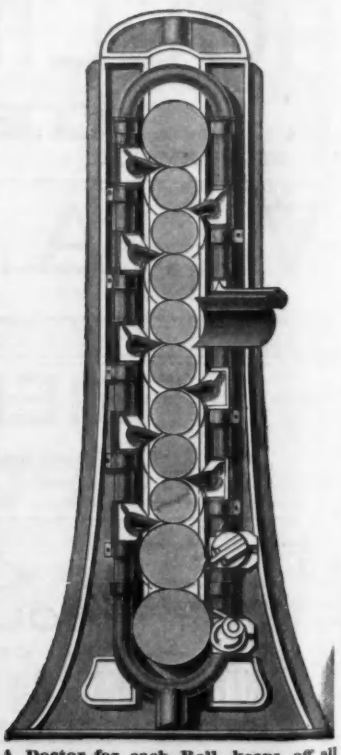
It prevents all danger and risk to the person of the operatives ordinarily incident upon leading the paper through the stack.
It avoids "making broken" in the stack, as the doctors prevent the paper from clinging to the rolls, and as the action of the doctors upon the individual rolls removes any and all calender spots from their surfaces, the latter are kept in perfect condition, thereby preventing defacement or injury to the paper, which would otherwise be the case; also by keeping the rolls clean, removing all dust and grit, the necessity for frequent grinding of the latter is avoided.
The blower or fan which supplies the air should be located in some place where cold moist air can be obtained, and as this cold air is supplied through the doctors to the surface of the rolls the latter are prevented from heating, and a better and more uniform surface is given to the paper.
In operation, the paper is introduced at the top roll and is conducted automatically between the other rolls, emerging from the bottom, and can be conducted immediately, without loss, to the reel.
Among Paper Manufacturers now using *Smith's Pneumatic Calender Feed*, all of whom indorse it most highly, are:

POLAND PAPER CO.,	Mechanic Falls, Me. (1)	H. POWELL RAMSDELL,	Salisbury Mills, N. Y. (4)
WEBSTER PAPER CO.,	Orono, Me. (2)	HERKIMER PAPER CO.,	Herkimer, N. Y. (2)
SUGAR RIVER PAPER CO.,	Claremont, N. H. (1)	ADAMS & BISHOP CO.,	Newburgh, N. Y. (2)
GLEN MANUFACTURING CO.,	Berlin Falls, N. H. (5)	ONTARIO PAPER CO.,	Watertown, N. Y. (2)
WINNIPISEOGEE PAPER CO.,	Franklin, N. H. (5)	FORT ORANGE PAPER CO.,	Castleton, N. Y. (2)
FALL MOUNTAIN PAPER CO.,	Bellows Falls, Vt. (7)	FRONTENAC PAPER CO.,	Dexter, N. Y. (1)
WILDER & CO.,	Olcott Falls, Vt. (3)	ST. LAWRENCE PAPER CO.,	Dexter, N. Y. (1)
MONTAGUE PAPER CO.,	Turner's Falls, Mass. (4)	NIAGARA PAPER CO.,	Niagara Falls, N. Y. (1)
HAVERHILL PAPER CO.,	Haverhill, Mass. (2)	CLIFF PAPER CO.,	Niagara Falls, N. Y. (2)
G. W. WHEELWRIGHT PAPER CO.,	Leominster, Mass. (1)	FONDA LAKE PAPER CO.,	Watertown, N. Y. (1)
SYMS & DUDLEY PAPER CO.,	Holyoke, Mass. (1)	JEFFERSON PAPER CO.,	Black River, N. Y. (1)
RUSSELL PAPER CO.,	Lawrence, Mass. (8)	TAGGART BROS. CO.,	Watertown, N. Y. (2)
WINONA PAPER CO.,	Holyoke, Mass. (2)	M. & W. H. NIXON PAPER CO.,	Manayunk, Pa. (4)
PAGE PAPER CO.,	Hardwick, Mass. (1)	P. H. GLATFELTER,	Spring Forge, Pa. (5)
G. R. DICKINSON PAPER CO.,	Holyoke, Mass. (1)	W. C. HAMILTON,	Philadelphia, Pa. (1)
EXCELSIOR PAPER CO.,	Holyoke, Mass. (1)	CLARION PULP AND PAPER CO.,	Johnsonburgh, Pa. (1)
FAIRCHILD PAPER CO.,	Pepperell, Mass. (1)	JESSUP & MOORE PAPER CO.,	Wilmington, Del. (1)
TILESTON & HOLLINGSWORTH,	Matapan, Mass. (2)	G. H. FRIEND PAPER CO.,	West Carrollton, Ohio. (1)
BRIDGE MILL C. M. CO.,	Pawtucket, R. I. (1)	VAN NORTWICK PAPER CO.,	Batavia, Ill. (2)
BRIDGEPORT PAPER CO.,	Bridgeport, Conn. (2)	BREMAKER-MOORE PAPER CO.,	Louisville, Ky. (2)
C. H. DEXTER & SON,	Windsor Locks, Conn. (2)	KIMBERLY & CLARK,	Kimberly, Wis. (4)
F. R. WALKER & SON,	Burnside, Conn. (1)	CENTRALIA PULP AND WATER POWER CO.,	Centralia, Wis.
HUDSON RIVER PULP AND PAPER CO.,	Palmer Falls, N. Y. (4)	CALIFORNIA PAPER CO.,	Stockton, Cal. (1)
REMINGTON PAPER CO.,	Watertown, N. Y. (2)	RIORDAN PAPER MILLS,	Merritton, Ontario. (2)
GLENS FALLS PAPER MILL CO.,	Glens Falls, N. Y. (4)	TORONTO PAPER MILL,	Merritton, Ontario. (1)
FRANK GILBERT,	Watertown, N. Y. (1)	ANDERSON PAPER CO.,	Anderson, Ind. (1)
TICONDEROGA PAPER CO.,	Ticonderoga, N. Y. (1)	DENVER PAPER MILL CO.,	Denver Col.
LAKE GEORGE PULP AND PAPER CO.,	Ticonderoga, N. Y. (2)	WILLAMETTE PULP AND PAPER CO.,	Oregon City, Ore.

Convincing testimonials as to the real merits and advantages of SMITH'S PNEUMATIC CALENDER FEED will be shown upon application. The entire device is compact, readily adjusted, and enables large stacks to be easily and efficiently managed with least labor, and with but little or no loss of broken or damaged paper.

THE SMITH IMPROVED PAPER MACHINERY CO.,

85 WATER STREET, BOSTON.



A Doctor for each Roll keeps off all Calender Scabs.

DETROIT SULPHITE FIBRE CO.,

— MANUFACTURERS OF —

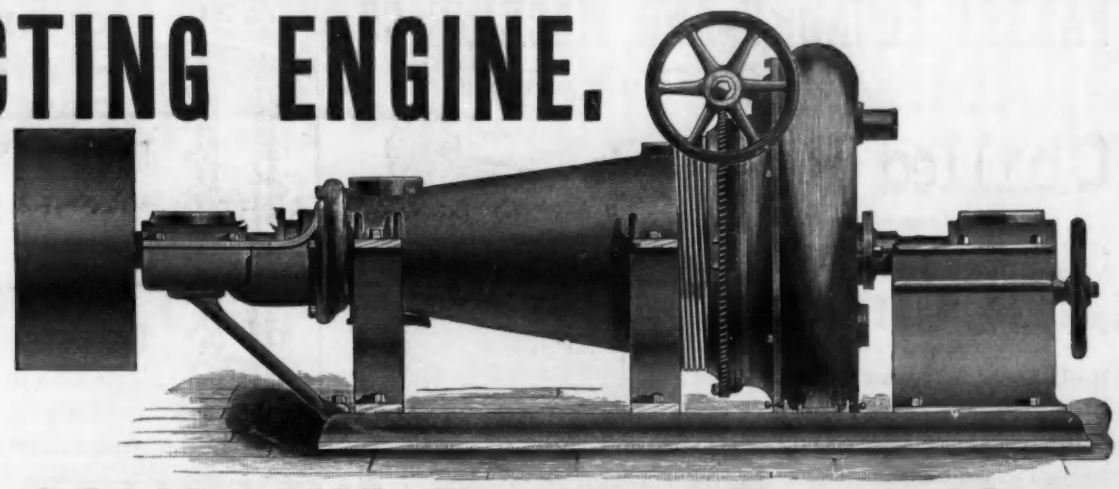
SULPHITE FIBRE,

☞ *CORRESPONDENCE SOLICITED.*

Mitscherlich Process.

DETROIT, MICHIGAN.

MARSHALL'S PERFECTING ENGINE.



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Are now running on all Grades of Paper,

—FROM A—

MANILLA TO ANIMAL SIZED WRITINGS.

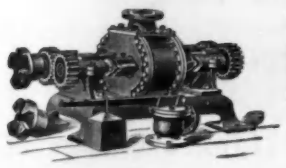
Very Best of References Furnished.

ADDRESS MARSHALL ENGINE COMPANY, TURNER'S FALLS, MASS.

D. H. & A. B. TOWER, ARCHITECTS, HOLYOKE, MASS.

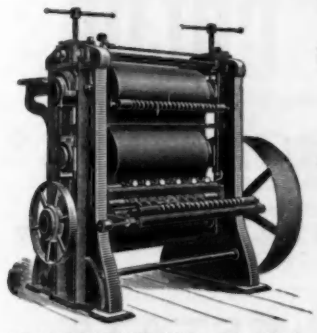
SPECIAL ATTENTION GIVEN TO PLANS FOR

Paper Mills, Soda and Sulphite Fibre Mills, Ground Wood Mills.

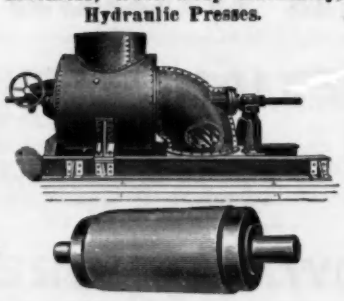


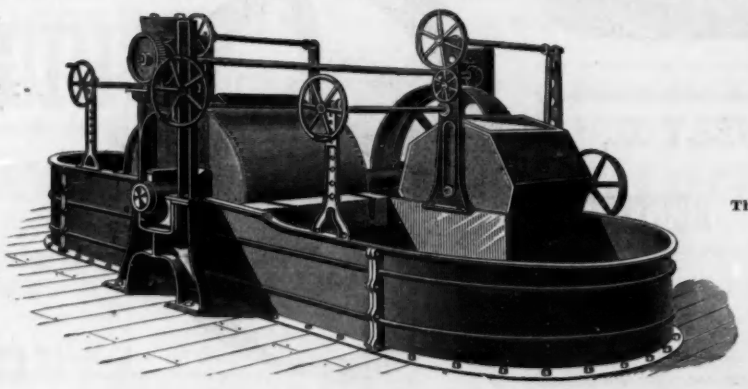
HOLYOKE MACHINE CO., HOLYOKE, MASS.

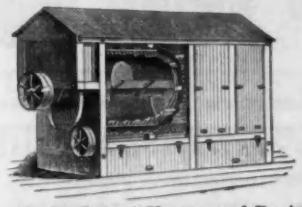
All Kinds of CALENDERS for PAPER MILLS, GLAZED PAPER and CARDBOARD MANUFACTURERS.



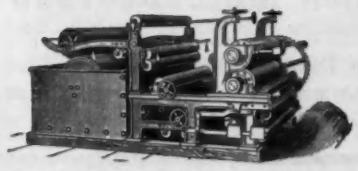
Dusters, Engines, Turbine Wheels, Cotton Rolls, Husk Rolls, Paper Rolls, Chilled Iron Rolls, Elevators, Wood Pulp Machinery, Hydraulic Presses.

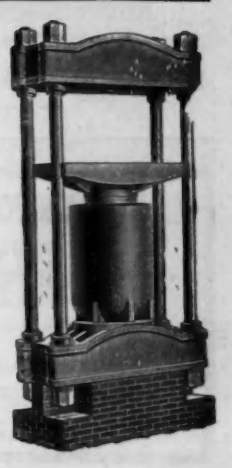






The Taylor Patent Cleaner and Duster.





☞ CORRESPONDENCE SOLICITED.

THE BAGLEY & SEWALL CO., WATERTOWN, N. Y.,

MANUFACTURERS OF

FOURDRINIER PAPER MACHINES

AND

PULP AND PAPER MACHINERY.

G. W. KNOWLTON, Pres. Office of THE ONTARIO PAPER CO., JOHN A. DECKER, Supt.

WATERTOWN, N. Y., August 12, 1890.

THE BAGLEY & SEWALL CO.:

GENTLEMEN—The following is the record of the 86 inch wire Fourdrinier Machine purchased of you for the past week:

August 4, . . 24,335 lbs.	August 6, . . 24,020 lbs.	August 8, . . 23,337 lbs.
August 5, . . 23,390 lbs.	August 7, . . 24,010 lbs.	August 9, . . 24,865 lbs.

Average per day, . . . 23,992 lbs.

These figures are the net shipping weight of the paper, averaging 31 lbs. to the ream, 24 × 36 in.

Yours respectfully, E. B. STERLING, Sec'y.

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Hastily,

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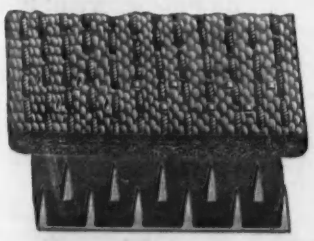

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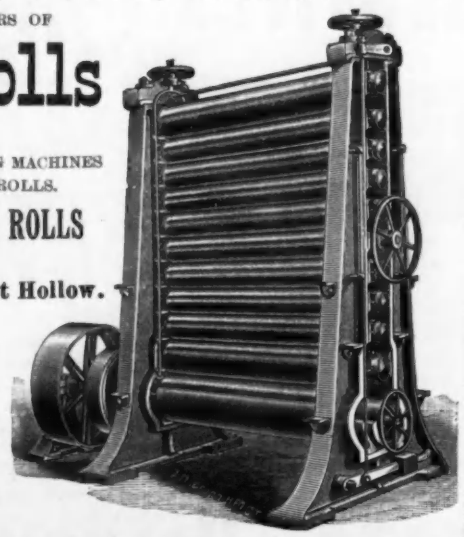

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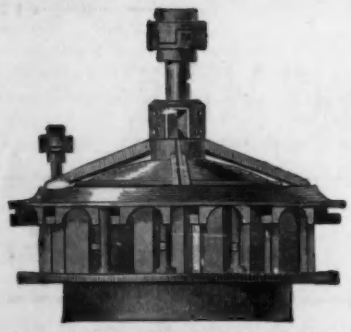

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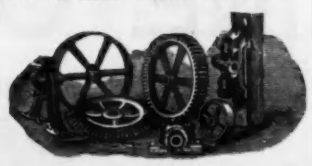

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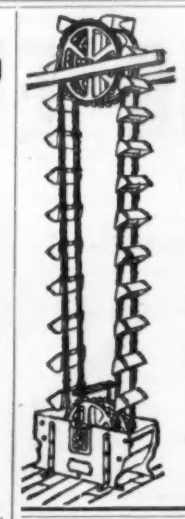

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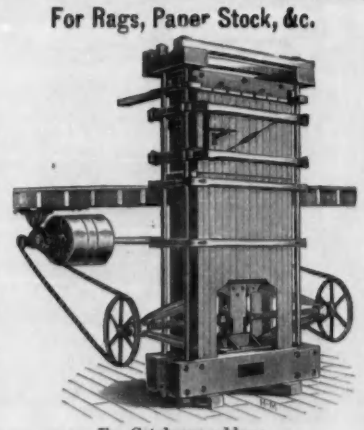

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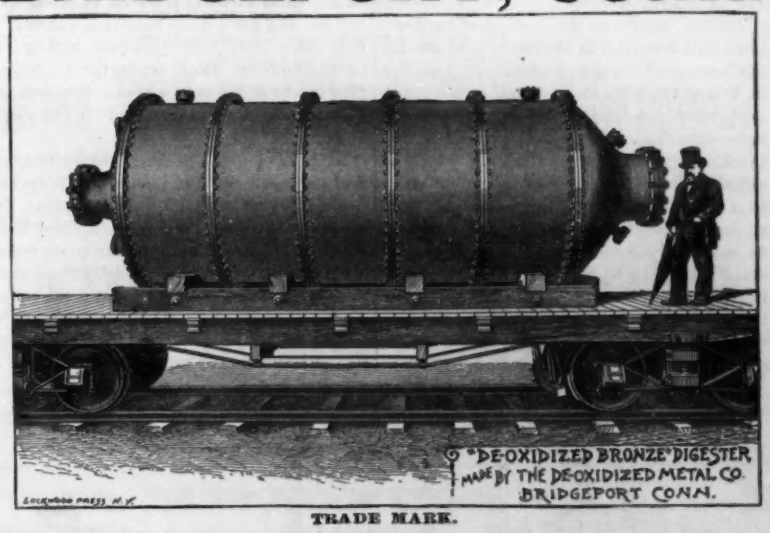

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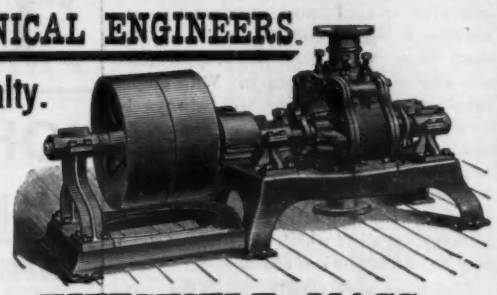

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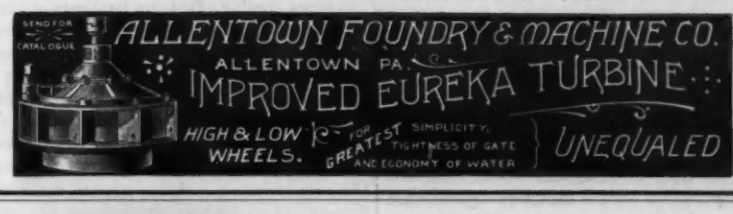
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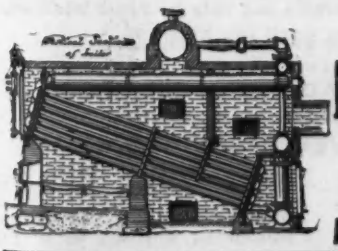

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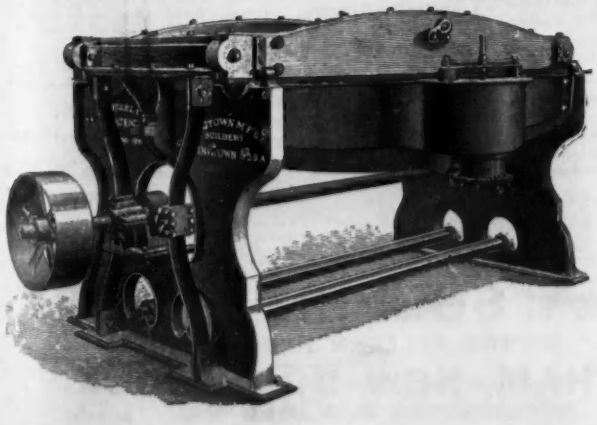

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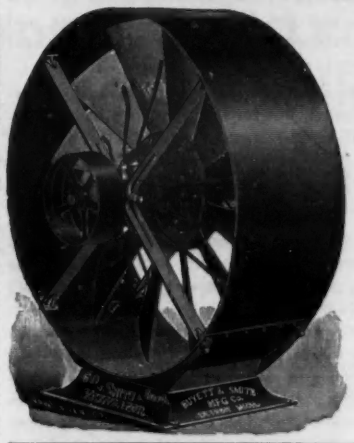

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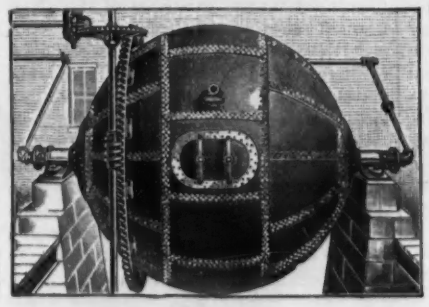

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The Steam Loop.

By Walter C. Kerr.*

The steam loop is generally called an ingenious device, and if so the ingenuity certainly appears at once in the name, "steam loop," a name which, though almost meaningless, seems very consistent with its simplicity. The name has the further merit of not portraying any of its functions or peculiarities, and hence cannot be an embarrassing restraint, as is so frequently the case with names attached to mechanical apparatus.

That so simple an application of nature's laws as is involved in the steam loop should not have been turned to useful effect earlier is, at first thought, strange, but as one looks deeper into the subject the reasons become more apparent. While no engineer is unfamiliar with the phenomena on which it depends, it has been interesting to note that even those best informed in practical steam engineering or theoretical research in thermo-dynamic science seldom understand its action on first acquaintance, though they soon recognize in it a new combination of functions.

Its mission is the simple and useful one of returning water of condensation to steam boilers. Its chief characteristics are that its action is continuous, rapid and positive, and that it is a closed system operating under widely varying conditions, without valves or adjustments. Its construction is simply that of ordinary piping.

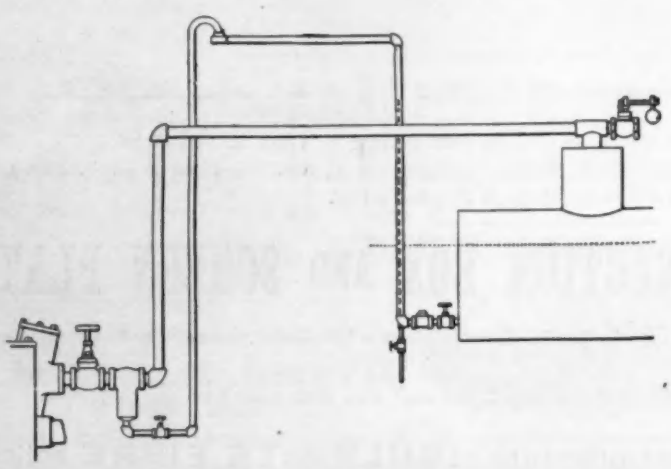

Fig. 1.

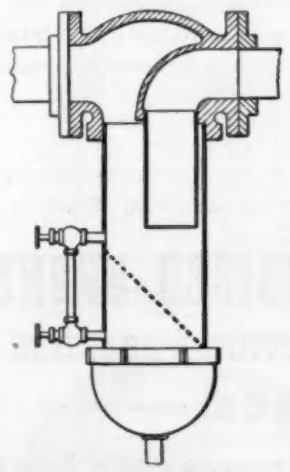

Fig. 2.

The principles on which its action depends are as follows:

Difference of pressure may be balanced by a water column.

Vapors or liquids tend to flow to the point of lowest pressure.

Rate of flow depends on difference of pressure and mass.

Decrease of static pressure in a steam pipe or chamber is proportional to rate of condensation.

In a steam current water will be carried or swept along rapidly by friction.

To these simple statements there will probably be no dissent. We have all used them in many ways, and some of them have disagreeably used us in a manner quite unwelcome. But it remained for the steam loop to collect a few of these erratic agents and create from them a useful system, combining the certainty of flow due to difference of pressure with the quiet uniformity with which steam condenses, and with the force we see uselessly expended in the hammering of our steam heating apparatus.

It will be evident that the steam loop therefore contains no mysterious factors, even though, like the steam injector, it has been called a paradox.

We have here a working model (see Figure 1), the steam pipe passing from the boiler to a separator near the engine, which separates the water of condensation and entrainment from the steam. The drip from the separator is below the boiler, and evidently were a pipe run from this drip outlet directly to the boiler we would not expect the water to return uphill. Moreover, the pressure in the boiler is (say) 100 pounds, while in the separator it is only 95 pounds, due to the decrease in pressure in the steam pipe by reason of which the steam flows to the engine. Thus the water must not only flow uphill to the boiler, but also must overcome the difference in pressure. The device to return it must perform work, and in so doing heat must be lost. The loop therefore may be considered as a peculiar motor doing work, the heat expended being radiation from the upper or horizontal portion.

We are now prepared to examine its mechanical operation, which is best done with the model in action. The form of separator is immaterial, there being many kinds differing more or less in construction and efficiency. The one in model is simply an elbow turned down into the body of the device (see Fig. 2), throwing the steam against a perforated plate above which the dry steam is removed by a pipe leading to the engine, while the water collects below.

From the separator drain leads the pipe called the "riser," which at a suitable height empties into the "horizontal." This leads to the "drop leg," connecting to the boiler anywhere under the water line. The riser, horizontal and drop leg form the loop, and usually consist of pipes varying in size from three-fourths of an inch to 2 inches, and are wholly free from valves, the loop being simply an open pipe giving free communication from separator to boiler. (For convenience stop and check valves are inserted, but they take no part in the loop's action.)

Suppose steam is passing, engine running and separator collecting water. The pressure of 95 pounds at the separator extends (with even further reduction) back through the loop, but in the drop leg meets a column of water (indicated by the heavy broken line) which has risen from the boiler where the pressure is 100 pounds to a height of about 10 feet. That is to the hydrostatic head equivalent to the 5 pounds difference in pressure. Thus the system is placed in equilibrium.

Now, the steam in the horizontal condenses slightly, lowering the pressure to 94 pounds, and the column in drop leg rises 2 feet to balance it, but meanwhile the riser contains a column of mixed vapor, spray and water which also tends to rise to supply the horizontal as its steam condenses, and being lighter than the solid water of the drop leg it rises much faster. If the contents of the riser have a specific gravity of only .1 that of the water in the drop leg the rise will be ten times as rapid, and when the drop leg column rises 1 foot the riser column will lift 10 feet. By this process the riser will empty its contents into the horizontal, whence there is a free run to the drop leg and thence into the boiler. In brief, the above may be summed into the statement that a decrease of pressure in the horizontal produces similar effects on contents of riser and drop leg, but in degree inversely proportional to their densities. When the condensation in horizontal is maintained at a constant rate sufficient to give the necessary difference in pressure the drop leg column reaches a height corresponding to this constant difference, and rises no further. Thus the loop is in full action, and will maintain circulation so long as steam is on the system, and the differences of pressure and quantities of water are within the range for which the loop is constructed.

The above may be termed the rational explanation, but for simplicity we have omitted to include some of the features which are of importance in the loop's utility and which will appear later in our consideration of the subject.

"Solid" Water versus Spray.—In the model the water sometimes appears as a film along the sides of the pipes, or as spray, and often as slugs rising quickly and passing over. We cannot definitely state whether slugs form in practice in full size pipes, but their existence is doubtful except when the separator is partly flooded by boiler primage. In the model the pipes are so small that cohesion and capillary attraction are sufficient to account for the existence of the slugs. The resistance of small pipes causes comparatively slow velocity, and the slugs are readily seen. In the full sized apparatus, however, the velocity is very great, so that even in glass sections a slug's passage would scarcely be discernible. Observations in this line indicate absence of slugs and confirm the belief that the water (other than spray) is carried chiefly by friction of steam current along the sides of pipes, and at a velocity so great that the sweep is distinctly audible when much water is moving.

No water should accumulate in the separator, as it is the mission of the loop to remove it before it assembles into a liquid mass. It is here that the constant and vigorous action is of great practical utility, enabling the loop to act as a preventive of accumulation rather than a device for removing water after it has accumulated. The separator evidently must be of such form as to give the sweep toward and through the loop better opportunity to pick up the entrained water than is afforded the current sweeping toward the engine, pump or steam using device. It is interesting to know that experiments on very large separators, as large as 5 feet by 12 feet, not discharging their contents, show that if water be allowed to accumulate to a certain height no further rise will occur, even though much moisture be present, in the steam, showing that the steam sweeping through carries the water with it, unless that already deposited be drained away. Thus a separator to properly perform its function of drying steam must be empty, while obviously to stop and hold primage its volume must not be impaired by periodic accumulations. Thus "solid" water in bulk is to be avoided. Condensation and entrainment should be retained and returned as spray or films, while primage should be broken up into particles or masses small as possible and instantly returned before a cumulative effect causes damage. In performing these functions the steam loop offers a new process in the apparently humble mission it serves.

That separators alone do not generally separate all the moisture from the steam is quite clearly shown by the fact that a loop will often return more water when the throttle is closed and the engine is idle, since the separator must then stop all moisture and the loop return it. With engine running some moisture will always be carried over, the amount, of course, depending upon the efficiency of separator. Experiments on this feature are difficult because of the interference due to varying amounts of condensation, entrainment and primage, on all of which the draft of steam may have more or less effect.

Limitations.—Generally speaking, the limits within which the steam loop is applicable are very wide, for the principle applies quite as well to great as to small differences of pressure. Similarly, an enormous quantity of water may be handled quite as easily as a small amount. The action will continue reliably through long pipes, overhead or underground. Water may be lifted from levels far below the boilers. The use to which the steam may be applied after the loop and separator have dried it of course has no effect upon the loop system. Wherever steam is so used that it condenses rapidly, as in dryers, steam heating systems, jackets, steam kettles, &c., the loop can be applied to the return of this water of condensation the same as from an ordinary separator, and that, too, against any difference of pressure.

The above statements are made to illustrate how thoroughly and completely the loop can be applied to a wide range of conditions, but when we come down to the practical application, and say how far it is expedient to apply it, the field contracts somewhat.

To take up the different limiting conditions and comment upon their degree will show most clearly the practical range through which the loop may be made a commercial device.

(To be continued.)

* Reprinted from the Journal of the Franklin Institute, October, 1891.

At a meeting of the trustees of the Stationers' Board of Trade, held on Tuesday, the Spencerian Pen Company was elected a member of the board.

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Bleach Boilers, Fan Dusters, Ferry's Patent Star Dusters,
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Manufacturers of **SULPHITE FIBRE,**
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Imports and Exports.

IMPORTS AT NEW YORK.

FOR THE WEEK ENDED NOVEMBER 6, 1891.

An. Colors..	260	$15,619	Paper.....	313	$32,894
Alum	21	198	Steel Pens..	4	1,772
Alum's Cake	—	—	Stationery ..	8	227
Bl. Powders	1,415	23,579	Slate Pencils	—	—
Soda Ash...	3,200	40,482	Clay	—	—
Soda, Caus..	2,436	29,280	Jute Butts ..	—	—
Soda, Sal....	60	240	P. Hangings	5	214
Ultramarine	14	251	Paper Stock.	7,847	74,372
Books	598	68,689	Terra Alba..	—	—
Newspapers	543	18,887	Waste.....	7	1,946
Engravings.	145	15,162	Wood Pulp..	2,912	18,594
Ink	210	3,656			
Lead Pencils	1	30	Totals....	19,999	356,092

Imports General Merchandise for the week ended November 6, 1891..... $8,551,409

IMPORTS OF PAPER STOCK AT NEW YORK.

FROM JANUARY 1 TO NOVEMBER 10, 1891.

Whence Imported.	*Rags.*	*Old Papers.*	*Chemical Fibre.*	*Ground Wood.*	*Manilla Stock.*
	Bales.	Bales.	Tons.	Tons.	Bales.
Alexandria....	2,441	—	—	—	5
Amsterdam....	—	—	124	—	—
Antwerp.....*a*	1,090	158	1,074	39	6,256
Arendal.....	—	—	—	304	—
Aspinwall.. .	1,047	75	—	—	26
Blaye	768	—	—	—	—
Bordeaux.....	2,458	31	—	—	—
Bremen.....*b*	3,560	93	—	—	4,648
Bristol.....	—	21	—	—	4,315
Calcutta	—	—	—	—	26,091
Catania.....	958	17	—	—	—
Cent. America	1,500	—	—	—	—
Christiania...	—	—	1,022	—	35
Copenhagen...	1,789	—	2,452	—	1,666
Dublin.....	—	147	—	—	—
Dundee.....	176	340	79	—	10,844
Genoa.....*c*	1,496	127	—	—	5,267
Gefle.....	—	—	570	—	—
Ghent.....	290	—	—	—	—
Glasgow.....	945	733	—	—	1,135
Gothenburg...	—	—	1,231	1,185	215
Greytown.....	32	—	—	—	—
Hamburg.....	3,841	393	1,130	—	4,121
Hamilton.....	—	—	—	—	30
Havana.....	—	—	—	—	5
Hiogo.....	15,979	—	—	—	—
Hull.....*d*	12,774	464	3,127	—	14,852
Havre.....	70	2	—	—	264
Leghorn.....	5,894	—	—	—	—
Leith.....	62	316	—	—	432
Liverpool....*e*	3,070	1,013	61	—	15,184
London.....*f*	7,123	4,166	362	—	5,783
Marseilles.....	2,592	—	—	—	127
Naples.....	14	—	—	—	—
Newcastle....	128	—	—	—	5,508
Palermo	—	—	—	—	478
Pillau.....	5,927	19	—	—	210
Rotterdam....	2,590	—	991	2	1,722
Stettin.....	13,312	—	2,045	160	2,414
Swansea.....	—	—	—	—	1,699
Yokohama...	6,270	—	—	—	—
Trieste.....	299	—	—	—	—

a. Including 560 bs. flax waste.
b. Including 156 bs. flax waste.
c. Including 861 bs. cotton waste.
d. Including 635 bs. flax waste.
e. Including 106 bs. cotton waste.
f. Including 9 bs. flax waste.

NEW YORK IMPORTS.

FROM NOVEMBER 3 TO NOVEMBER 10, 1891.

Paper Stock.

G. Hamilton, Noordland, Antwerp, 16 tons chemical fibre.
G. Hamilton, Pennsylvania, Antwerp, 21 tons chemical fibre.
James Pirnie, by same, 258 bs. bagging.
James Pirnie, Hermann, Antwerp, 256 bs. bagging.
C. B. Richard & Co., Nederland, Antwerp, 317 bs. bagging.
Train, Smith & Co., by same, 24 bs. bagging.
Oelrichs & Co., Eider, Bremen, 15 bs. manillas.
G. Rau, Panama, Bordeaux, 206 bs. rags.
T. K. Berlin, Kenilworth, Calcutta, 2,894 bs. manillas.
Howe, Balch & Co., by same, 34 bs. manillas.
Cabot, Ray & Co., by same, 300 bs. manillas.
J. W. Mason & Co., Thingvalla, Copenhagen, 316 coils manillas.
G. Rau, by same, 156 bs. rags, 44 tons chemical fibre.
Burgass & Co., by same, 343 bs. bagging.
F. Bertuch & Co., by same, 120 tons chemical fibre.
F. H. Wright, by same, 44 tons chemical fibre.
Jessup & Moore Paper Company, Croft, Dundee, 112 bs. manillas.
Perkins, Goodwin & Co., by same, 41 bs. manillas.
Perkins, Goodwin & Co., Croma, Dundee, 61 bs. manillas.
R. H. Overton & Son, by same, 64 bs. manillas.
J. L. Taylor, by same, 215 bs. manillas.
Horace Dutton & Co., by same, 114 bs. manillas.
F. La Manna, Croma, Havre, 156 bs. bagging.
W. A. Avis & Co., Elwell, Hiogo, 600 bs. rags.
Augustine Smith & Co., Loodamia, Hiogo, 1,203 bs. rags.
F. Bertuch & Co., Colorado, Hull, 15 tons chemical fibre.
G. Rau, by same, 40 tons chemical fibre.
J. W. Lyon & Co., by same, 35 tons chemical fibre.
James Pirnie, by same, 186 bs. rags, 246 bs. bagging.
R. H. Overton & Son, by same, 330 bs. bagging.
W. A. Castle, Armonia, Leghorn, 290 bs. rags.
C. T. Smith, by same, 205 bs. rags.
W. A. Castle, Olympia, Leghorn, 142 bs. rags.
James Pirnie, Italy, Liverpool, 144 bs. bagging.
G. W. Millar & Co., by same, 5 bs. manillas.
Burgass & Co., by same, 65 bs. manillas.
James Pirnie, St. Pancras, Liverpool, 281 bs. bagging.
R. H. Overton & Son, by same, 169 bs. bagging.
J. W. Mason & Co., by same, 154 bs. manillas.
Lewy Brothers, Helvetia, London, 84 bs. rags.
J. A. Howard, by same, 137 bs. papers.
Lewy Brothers, Alma, Pillau, 1,693 bs. rags.
Leon Gottheil, Rotterdam, Rotterdam, 72 tons chemical fibre.
John H. Lyon & Co., Schiedam, Rotterdam, 46 bs. rags.
Perkins, Goodwin & Co., Johann Frederich, Stettin, 498 bs. bagging, 498 bs. rags.

Paper.

Louis C. Wagner, Noordland, Antwerp, 7 cs.
Scovill & Adams Manufacturing Company, by same, 11 cs.
John A. Norman, by same, 6 cs.
J. W. Hampton & Co., by same, 1 cs.
Kaufmann & Strauss, Wyoming, Liverpool, 4 cs.
G. W. Sheldon & Co., by same, 3 cs.
L. De Jonge & Co., Rotterdam, Rotterdam, 16 cs.
W. F. Barden, by same, 4 cs.
W. H. Ward & Co., Germanic, Liverpool, 7 cs.
E Kimpton, Panama, Bordeaux, 5 cs.
F. G. Giesse, Elbe, Bremen, 2 cs.
Knauth, Nachod & Kuhne, by same, 2 cs.
Louis C. Wagner & Co., by same, 1 cs.
F. W. Devoe & Co., Apollo, Antwerp, 19 cs.
F. Melvin, by same, 14 cs.
R. E. Thibaut, Circassia, Glasgow, 18 cs. hangings.
Dennison Manufacturing Company, Alaska, Liverpool, 20 bdls.
Miller & Flinn, Dubbledam, Rotterdam, 3 cs.
Scovill & Adams Manufacturing Company, Rugia, Hamburg, 4 cs.
Dingelstedt & Co., La Bretagne, Havre, 1 cs.
W. J. Morse, by same, 14 cs.
American Trading Company, by same, 8 cs.
R. F. Downing & Co., by same, 31 cs.
Regenhard, Shevill & Co., by same, 2 cs.
Scoville Manufacturing Company, Gothia, Liverpool, 6 cs.
L. De Jonge & Co., by same, 2 cs.
E. & H. T. Anthony & Co., by same, 2 cs.
G. Gennert, by same, 14 cs.
Kupfer & Co., Friesland, Antwerp, 6 cs.
E. G. Soltman & Co., by same, 6 cs.
F. W. Devoe & Co., by same, 6 cs.
L. De Jonge & Co., by same, 161 cs.
Louis C. Wagner & Co., by same, 10 cs.
Dingelstedt & Co., by same, 7 cs.

BOSTON IMPORTS.

FROM NOVEMBER 4 TO NOVEMBER 10, 1891, INCLUSIVE.

Paper, &c.

Wm. Guild & Co., Scythia, Liverpool, 6 bs. periodicals.
White, Son & Co., Cremon, Antwerp, 1 cs. paper.
Forbes Lithograph Company, Kansas, Liverpool, 1 cs. labels.

Paper Stock.

Train, Smith & Co., Cremon, Antwerp, 48 bs. rags.
Train, Smith & Co., Prussian, Glasgow, 416 bs. waste paper.
J. B. Moore & Co., by same, 100 bs. waste paper.
C. A. Cheney, Kansas, Liverpool, 90 bs. rags, 51 bs. waste paper.
True & McClelland, by same, 80 bs. waste paper.
J. B. Moore & Co., by same, 184 bs. waste paper.
Train, Smith & Co., Stockholm City, London, 96 bs. rags.
Fairchild Paper Company, by same, 247 bs. rags.
Crocker, Burbank & Co., by same, 220 bs. waste paper.
C. P. Sumner, by same, 60 bs. waste paper.
T. F. Ring, by same, 202 bs. waste paper.
J. B. Moore & Co., by same, 68 bs. waste paper.
Train, Smith & Co., Inchgarvie, London, 230 bs rags.
T. F. Ring, by same, 76 bs. waste paper.
C. A. Cheney, by same, 50 bs. waste paper.
Wheelwright Paper Company, by same, 262 bs. waste paper.
Perkins, Goodwin & Co., by same, 82 bs. waste paper.
J. B. Moore & Co., by same, 19 bs. and 106 coils manillas.
Order, by same, 87 bs. rags, 80 bs. waste paper.
Train, Smith & Co., Norseman, Liverpool, 187 bs. waste paper.
C. A. Cheney, by same, 134 bs. rags, 42 bs. manillas.
True & McClelland, by same, 104 bs. waste paper.
Perkins, Goodwin & Co., by same, 60 bs. rags.
T. F. Ring, by same, 28 bs. rags.
Robert Bishop, by same, 35 bs. waste paper.
J. B. Moore & Co., by same, 121 bs. waste paper.

Wood Fibre.

Leon Gottheil, British Empire, Antwerp, 90 tons.

Sizing.

Train, Smith & Co., Kansas, Liverpool, 311 bags.
C. A. Cheney, by same, 291 bags.
C. A. Cheney, Norseman, Liverpool, 87 bags.
Thomas Groom & Co., by same, 80 bags.

Bleaching Powder.

Warren & Co., Norseman, Liverpool, 308 cks.
Warren & Co., Kansas, Liverpool, 250 cks.
J. L. & D. S. Riker, Scythia, Liverpool, 79 cks.

Caustic Soda.

Warren & Co., Kansas, Liverpool, 100 drums.
E. & F. King & Co., by same, 150 drums.
Warren & Co., Norseman, Liverpool, 150 drums.
Champion Chemical Company, by same, 175 drums.

Soda Ash.

Warren & Co., Norseman, Liverpool, 77 cks.
Jerome Marble, by same, 98 cks.
Warren & Co., Kansas, Liverpool, 39 cks.

Soda Crystals.

E. & F. King & Co., Kansas, Liverpool, 280 bbls.
Jerome Marble, by same, 224 bbls.
E. & F. King & Co., Norseman, Liverpool, 280 bbls.

EXPORTS of Paper, &c., from New York for the Week Ended November 9, 1891.

BOOKS, cases, to British Australasia, 2; to British West Indies, 9; to Mexico, 24; to British possessions in Africa, 7; to Venezuela, 19; to Central America, 4; to Hamburg, 8; to Liverpool, 20; to Havre, 5; to Hayti, 12; to Liberia, 6; to British East Indies, 15; to China, 8; to Cuba, 1; to Chili, 1; to French West Indies, 4; to Kilmarnock, 1; to Leipsic, 1; to London, 48; to Newfoundland, 4; to Nova Scotia, 8; to Rotterdam, 2; to Spanish possessions in Africa, 3; to San Domingo, 7; to United States of Colombia, 1.

PAPER, to British Australasia, 409 pkgs.; to British West Indies, 1,009 pkgs.; to Central America, 10 cs.; to Cuba, 1,158 cs.; to Brazil, 260 pkgs.; to London, 37 pkgs.; to Argentine Republic, 10 cs.; to Porto Rico, 300 pkgs.; to Peru, 1 cs.; to United States of Colombia, 54 pkgs.; to Venezuela, 30 pkgs.; to Rotterdam, 19 bdls.; to Stettin, 40 bdls.; to Schoenenwerd, 13 bdls.; to Antwerp, 24 bdls.; to British possessions in Africa, 5 cs.; to Berlin, 60 pkgs.; to Bremen, 6 cs.; to Christiania, 20 pkgs., 1 cs.; to Denton, 40 bdls.; to Darmstadt, 1; to Dutch West Indies, 7; to Ecuador, 1 bale, 1 cs.; to Hayti, 3 pkgs.; to Mexico, 1 bale, 40 pkgs., 1 cs.; to Hamburg, 1 cs.; to New Zealand, 9 pkgs.; to Newfoundland, 2 pkgs.

STATIONERY, cases, to British Australasia, 26; to British West Indies, 8; to Liverpool, 3; to Venezuela, 10; to Hayti, 5; to Peru, 1; to Nova Scotia, 3; to Chili, 7; to Christiania, 2; to Copenhagen, 2; to Dutch West Indies, 6; to Havre, 3; to London, 58; to Liberia, 1; to Mexico, 17; to New Zealand, 2; to Newfoundland, 2; to United States of Colombia, 32; to Cuba, 5.

AGGREGATES AND VALUES.

Paper, reams.....	—	—
Paper, pkgs	1,828	$4,212
Paper, cases	1,744	13,150
Books, cases	213	14,336
Stationery, cases.....	193	7,922
Rosin, bbls.....	1,022	3,303
Totals.....	5,000	$42,923

Exports General Merchandise for the week ending November 9, 1891..... $8,429,729

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HOWARD LOCKWOOD. WILLIAM P. HAMILTON.

NEW YORK: SATURDAY, NOVEMBER 14, 1891.

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Subscription and postage for Germany per annum..... 24 reichsmark

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SOME active work by the secretary of the American Paper Manufacturers' Association promises to be creditable alike to that gentleman and the organization itself. Readers of THE JOURNAL will find in another column a statement of the aims and purposes of the association as outlined by Mr. Barker. It is earnestly desired to enroll the members of the trade, not as firms but as individuals, and to secure the aid of all in the commendable feature of forming a representative body of manufacturers whose opinions and influence shall prove weighty in the consideration and treatment of public matters which bear specially upon the industrial and commercial interests of the country. We trust that such efforts will meet with success.

IT is some time since we have had anything on the subject of caseine size. The champion of this method of sizing returns to the attack in this issue of THE JOURNAL, and insists upon its importance, at the same time charging manufacturers with being slow to admit and adopt what he asserts is a better and more economical method than that in common use. If the economy indicated can be demonstrated, and the production and manipulation become such that caseine can be readily and inoffensively employed, it would seem that there must be some reason in the charges brought by our contributor. Perhaps one of these days some manufacturer may be moved to make exhaustive tests of this size, and thus determine definitely, once and for all, its capabilities and whether it is all that is claimed for it.

A NEW process for manufacturing alkaline carbonates and chlorine is illustrated and described on the first page of this issue of THE JOURNAL. The illustration shows the cycle of operations as well as the design of the apparatus employed. It will be seen that electricity is the agent employed for the production of the chlorine from a metallic chloride. An alkaline nitrate is decomposed by heating with calcic carbonate to produce the alkaline carbonate, and this nitrate is regenerated by the conversion of the recovered nitric acid into a solution of plumbic nitrate, which on precipitation with a solution of chloride of sodium yields a solution of the alkaline nitrate and a precipitate of metallic chloride. The chlorine is produced by electrolysis from the chloride while the latter is in a fused state. The operation is continuous.

ONE of the daily papers this week printed a statement to the effect that a war in Europe is certain to occur at an early day, not later than the coming spring, and the authority for this news is given as the German Emperor himself. This report, however, lacks confirmation, although it would not be strange if true. The mobilization of troops on the Russian frontier and the endeavor to cry down any breach of peace between the nations of Europe has shown that there has been constant fear of trouble. Russia has been making preparations for years, and it is just as certain that Germany is ready to accept the "resort to arms" whenever the first note of defiance is sounded. The question as to how far other countries may become embroiled is doubtful. There may be a general European free fight. In any case the United States will be called upon to supply the belligerents with supplies of all kinds. Indeed, it is intimated that the German Government has secured options on various lines of goods for military equipment and on a large amount of food products in this country. If the war predicted is entered upon we may look out for busy times.

WOOD PULP.

Within ten years the increase of production in the wood pulp branch of the paper making industry has been of extremely large proportions. In 1881 the producing capacity of the wood pulp mills was 72,645 tons per annum; today it is 443,055 tons, a gain of 509⅞ per cent. Yet the gain during the last year has not been so great as in former years, and is below the percentage of any other year within the decade. It is probable that the increase in chemical fibre production has had something to do with this.

The increase in producing capacity for the past year—1891, compared with 1890—has been 13,950 tons, or 4¼ per cent. There are twenty-two States in which the manufacture of wood pulp is carried on, and the following table shows the

DAILY PRODUCING CAPACITY (IN POUNDS) OF THE WOOD PULP MILLS IN THE UNITED STATES.

States.	1890.	1891.	Inc. or Dec.
California	18,000	18,000	.....
Colorado	... ...	24,000	*24,000
Connecticut	6,000	6,000	.....
Georgia	11,500	12,000	*500
Indiana	135,000	145,000	*10,000
Maine	343,000	327,000	†16,000
Maryland	14,000	20,000	*6,000
Massachusetts	53,300	58,300	*5,000
Michigan	84,000	79,000	†5,000
Minnesota	28,000	20,000	†8,000
New Hampshire	256,000	302,000	*46,000
New York	969,800	1,029,300	*59,500
North Carolina	10,000	10,000	.....
Ohio	20,000	20,000	.....
Oregon	40,000	40,000	.....
Pennsylvania	91,500	95,500	*4,000
Tennessee	1,000	1,000	.....
Vermont	277,600	267,600	†10,000
Virginia	28,000	24,000	†4,000
Washington	9,000	9,000	.....
West Virginia	114,000	90,000	†24,000
Wisconsin	351,000	356,000	†5,000
Totals	2,860,700	2,953,700	*93,000

* Decrease. † Increase.

The foregoing tabulation does not include some of the ground wood made at paper mills exclusively for their own use and not returned as part of the general output.

There was a gain of 6,500 pounds or 5 per cent. in the wood pulp board capacity. This product figures in the returns from only five States, viz., Indiana, Maine, Michigan, New York and Vermont, in which the daily capacity is given at 20,000, 51,000, 24,000, 6,000 and 35,000 pounds, respectively.

Watermarks.

BY DANDY.

A circular on the subject of electric bleaching was recently issued by a Berlin firm. In this it is stated that a process has been devised for producing bleaching material at a cost less than half of the present market value of bleach. Estimates are given and it is asserted that the cost of a plant producing 350 kilogs. of active bleaching chlorine (770 pounds) per day would be $14,480, of which sum $6,030 would go to pay for the electrolytic apparatus and a like sum for steam plant.

Only a limited number of paper mills, however, will use 2,200 pounds of 35 per cent. bleaching powder per day. A process which is said to be adapted to practical use, and to attain the results sought without great expense in a simple and cheap manner, is that of Hoepfner, whose apparatus produces 10 kilogs. (22 pounds) of active bleaching chlorine per horse power, which corresponds to about 30 kilogs. (66 pounds) of 35 per cent. bleaching powder. This claim is the more noticeable as hitherto all attempts at the production of chlorine by electrolysis have stranded on the rocks of expensive plants.

The question of water supply appears to be the topic which at present is very much alive, so far as paper makers are concerned. The reports from both East and West indicate that streams are low, and that in the event of a "freeze up" some machines will be idle for some time to come. It is expected, however, that before the month is out the heavens will open and relieve the situation.

The jute butt men would also welcome a downpour of rain, believing that with plenty of water there will be awakened some demand for their wares, as well as for other jute stocks.

Several paper makers took a "Trip to Chinatown" this week, but it ought to be added that the trip was made in the course of an evening at a New York theatre. So far as heard from there were a good many laughs during the evening. Mind you, I said laughs, not "smiles."

A paper making concern has called a meeting of its creditors at its mill for a date two days before Thanksgiving. Even under ordinary circumstances it would seem to be the more desirable plan to have the gathering in this city, which is more convenient for the greater number of creditors, as well as for those mourners whose grief is loudest because of their having the largest claims; but to put the date just before a national holiday, when a fellow wants to enjoy his turkey at home, is rather crowding the friends and relatives of the deceased.

Why not let the creditors "give thanks" before going to the meeting, when they will be undisturbed by questions of assets and liabilities? Perhaps the gentlemen who have called the meeting argue that the compromise will be at so large a figure that it will be entirely proper to take part in some festivities afterward, but the trouble is most of the creditors cannot get home in time to get up an appetite.

By a ruling of the Treasury Department those people whose friends abroad send them by mail Christmas presents which are dutiable, now have the privilege of sending the presents back if they do not want to pay the duty. How is that?

Getting back to the water question, it is said that up in Lee the sprinkling carts are now engaged in hauling water for household use and that some people have to purchase their "Croton cocktails" regularly. That's rather rough.

A market writer in an exchange says that the market is *bear* of supplies. Looks as though that was both a bull and a bad spell.

One occasionally sees some odd and peculiar signs, but I think that a Brooklyn concern in the paper hanging line takes the bun right out of the bakery. The sign of the house reads: "E. Leaf and Daughter." That is a very practical form of woman's rights, but a more extreme form would be "Miss Leaf and Father."

In the latter case it might be said that the paternal ancestor was in the "sere and yellow."

A new concern has been organized in this country to manufacture "cellulose," but it ought to be explained that this particular form of the article is not chemically reduced wood, but rather a manufacture from the bark of the cocoanut tree, which is used to fill compartments in ships, so that in case of injury to the hull they will become watertight as the "cellulose" swells and fills the gap. It has been tested for use in naval vessels, and where a shot pierces the armor the "cellulose" immediately closes the hole and prevents the entrance of the water in any quantity.

Trade Talks.

William T. Barker, Secretary of the American Paper Manufacturers' Association, Boston, Mass.—There appears to have been considerable misconception as to the action taken by the Paper Manufacturers' Association at its meeting in July last, and the idea has generally obtained that under the new constitution the association will be utilized for social purposes only. Such an idea is an entire mistake. The social features will be subordinate to the main purpose of the body. There will be and can be no attempt to handle questions relating to limitation of production, prices or fixing the wages of employees. These are matters which come within the scope of individual action so far as the mills are concerned, and the American Paper Manufacturers' Association does not and will not attempt to deal with either of them; but the organization is or should be representative of the entire paper trade, taking action on all matters affecting the general business interest and the status of the paper trade as a whole, such as questions of reciprocity, transportation, bankruptcy and the like, in which the trade are unitedly concerned, and which do not interfere with special interests. To do the work of this association requires that there should be one individual who shall attend to it all of the time, and it will keep him well occupied. I have discovered that since the formation of the American Paper Manufacturers' Association there have been about three hundred different individuals connected with it or who have attended its meetings, and my efforts are now being directed to securing the co-operation of as many members of the trade who are manufacturers as possible. I have addressed these three hundred people and am getting favorable responses. In fact the result is very encouraging. With one or two exceptions all from whom I have heard so far have authorized their names to be placed on the roll of membership and have paid the enrolment fee, although my notices have only been out for about a week. It will be understood that the membership is not limited to firms or to one representative of a firm, but that every active member of a firm can and should join the association. In a number of instances firms and corporations are represented by two, three and four gentlemen, all of whom are members. The enrolment fee is not based on the size of the machine, but is a fixed sum. The paper trade can easily see how by acting in concert with trade organizations in other departments of industry, we can impess upon legislative and executive officers the desirability of pushing measures which will be calculated for the general good. The association is in no sense a combination. It cannot be and would not be if we could make it so; it is not a combination or trust, as some people have asserted.

Communications.

Bleaching Jute.

WESTVILLE, Conn., November 11, 1891.

Editor of The Journal:

It would seem that several persons have lately made the discovery that jute can be made white.

I have a sample of jute bleached in 1856, and it is still of good color. When I received it it was as white as cotton.

Following is the formula which I used for bleaching jute: Cut and dust as usual, then boil twelve hours, with 35 pounds of lime per cwt.; wash two hours, drain, and press it hard; then break or rub it soft, or run it through a devil; put it into a gas chest, and treat it for twelve or fifteen hours with chlorine gas; then wash about one hour and boil again as follows:

Put into the boiler 2 pounds of soda ash to each cwt. of jute, also dissolve 20 pounds of soda crystals in 1 gallon of water by boiling; add to this 7 pints of sulphuric acid; mix and boil a few minutes; put this also into the boiler and boil for six or eight hours. The water will be black and the jute become about like dirty fines before bleaching. Draw off the liquor, wash it with clean water, press it, run it through a willow, put it in the engine again and add 6 or 8 pounds of bleaching powder to the cwt. and it will be as white as cotton rags. I have not said anything about making the chlorine gas, as that information can be found in any book on bleaching, but anyone interested may write to me and I will give full particulars. Gas bleaching when properly conducted will produce wonderful results.

JOHN THOMPSON.

Changes, Removals and New Firms.

C. W. Fleming, publisher, Riverside, Cal., has sold out.

E. T. Wilson, publisher, Missouri Valley, Ia., has sold out.

W. A. Hutton, publisher, Webster City, Ia., has sold out.

C. C. Davidson, stationer, Grand Rapids, Mich., has sold out.

Boutelle & Burr, publishers, Bangor, Me., have dissolved partnership.

Brigham & Webber, printers, Toronto, Ont., have dissolved partnership.

Samuel Amsler, stationer, Spokane, Wash., has been succeeded by Steep & Co.

Mills & Pillsbury, Vancouver, Wash., have sold their book and stationery store.

M. Green (Mrs. J. J.), publisher of the Le Sueur *Sentinel*, Le Sueur, Minn., has sold out.

Albert A. Keller has succeeded Keller & Van du Burgh, publishers, Rochester, Minn.

Johnson & Woodworth, 184 Monroe street, Chicago, have purchased the *Western Bookseller* from Charles Sergel & Co.

Charles K. Wells, bookseller, stationer, &c., Helena, Mon., has been succeeded by the C. K. Wells Company.

James S. Featherly, stationer, &c., Helena, Mon., has been succeeded by the C. K. Wells Company.

Oldfield Brothers, stationers, &c., Dundalk, Ont., are advertising to sell their stock at auction.

Williams & Thurber, printers, Helena, Mon., have been succeeded by the C. K. Wells Company.

Austin Meibeyer & Co., dealers in paper hangings, &c., Flint, Mich., have dissolved partnership.

McCrimmon & Buck, publishers of the *San Diegan*,, San Diego, Cal., have dissolved partnership.

The Grand Rapids Paper Company, wholesale paper dealer, Grand Rapids, Mich., has sold out.

Hart & Co., Minneapolis, Minn., have purchased the stationery and newspaper stands of W. A. Whitelaw in that city.

At San Rafael, Cal., A. L. Ham has sold his interest in the book and stationery store of Ham & Pascoe.

The firm of Chalmers & Doran, booksellers and stationers, at Los Angeles, Cal., has been dissolved.

George C. Hammond & Co., Central Falls, R. I., have disposed of their stationery and newspaper business.

The *Weekly Advertiser* at Erie, Pa., has been sold by John M. Glazier to Dr. D. P. Robins, late of the Erie *Dispatch* Printing and Publication Company.

Cranston & Co., manufacturers of paper cutters, bookbinders' machinery, &c., New York, have dissolved partnership and have been succeeded by Cranston & Jones.

George W. Pratt, A. P. Jordan, and J. G. Luning have incorporated the South and East Florida Publishing Company to publish newspapers in Leesburg, Palatka, Ocala and elsewhere in Florida. The capital stock is $10,000.

The New York City Record Publishing Company has been incorporated to carry on a general printing business. Capital, $1,000, and directors, Henry A. Beatty, Mary A. Beatty, Willis McDonald, William E. Dormetzer and Stephen A. Powell.

Failures.

A meeting of the creditors of T. M. Jones & Co., stationers, Dallas, Tex., who recently made a deed of trust with preferences to the amount of $44,000, was held at the Stationers' Board of Trade rooms yesterday.

The board of directors of the Buena Vista Paper Manufacturing Company, Buena Vista, Va., has appointed Wilbur L. Moorman, A. T. Barclay and B. E. Vaughan a committee to assist in settling the affairs of the company. The committee has called a meeting of creditors, to be held at Buena Vista, Tuesday, November 24, at 10 A. M.

William P. Nicholls, who is interested in the affairs of C. H. Genslinger, stationer, New Orleans, La., has issued a circular to the creditors of Mr. Genslinger. It states that a committee consisting of B. F. Choate, E. W. Hunter and William P. Nicholls have appraised Mr. Genslinger's assets at $7,982.12, and that the liabilities are $18,594.96; that L. W. Genslinger and Adrian F. Aitkens have proposed to buy those assets for $10,747.50, and that on that basis Mr. Genslinger proposes to pay his creditors 60 cents on the dollar in notes of the purchasers, indorsed by himself, at six, twelve, eighteen, twenty-four, thirty and thirty-six months. Mr. Nicholls states that if this proposition is not accepted Mr. Genslinger will have to make a surrender, in which event the creditors will only get 25 cents on the dollar.

Obituary.

DANIEL E. MEAD.

Daniel E. Mead, one of the foremost citizens of Dayton, Ohio, and president of the Mead Paper Company, which has paper and fibre mills at Chillicothe, Ohio, and paper mills at Dayton, Ohio, died at his home in the last named city on Tuesday morning, November 10.

His death was not unexpected, as he had not fully recovered from an attack of pneumonia which he experienced in July, and persisted in attending to business at a time when he should have taken greater care of himself; but his strength failed him, and on Sunday last he was again taken ill, with the result noted.

Daniel E. Mead was born at or near Cooperstown, N. Y., on September 17, 1817, and was in his seventy-fifth year. His mother died while he was very young, and he was taken into a family of Quakers, who reared him. At the age of sixteen he began to teach school, and made his living by this until twenty years old, when he started out to seek his fortune. He went to Philadelphia, but on the way lost all of his earthly possessions, his trunk and money being stolen from him by thieves.

He reached Philadelphia penniless, friendless, but determined to push ahead and cut out a fortune no matter what adverse circumstances opposed him. He struck up an acquaintanceship with a Mr. Durkee, who afterward became the manufacturer of wagons, trucks and cars. He found employment, but did not do particularly well. He went into partnership with Charles Durkee, his employer's son, and they started through the country selling smut machines, used by millers for blowing away chaff, sifting corn and wheat meal. The manufactory was located at Wheeling, but Mr. Durkee, Sr., was interested in it.

In the course of their travels they reached Dayton, where they sold their first smut machine to the Schneider Mills. They made Dayton their headquarters for a year or two, when the Durkee Manufacturing Company, in Philadelphia, failed and left the firm of Durkee & Mead, at Dayton, practically in a condition of financial collapse.

Mr. Mead sought a new position after the Durkee failure, and went into the employment of Judge Swain and Isaac Demarest, who had a grocery. After working there a while, with Charles Swain, son of the judge, he started a grocery and succeeded. Mr. Mead married the daughter of his former employer, Maria Demarest, in 1846. She was the mother of three of his children, Florence, C. E. and H. E. Mead. In 1863 his wife died.

While engaged in the grocery business he went into the oil business with Joseph I. Weston; he was also later in the malting business with Joe & Jerry Pierce, but only for a few years. In 1857 or '58 Mr. Mead, Joseph and Washington Weston bought the Ells, Clafflin & Co. paper mills at sheriff sale and went into business under the name of Weston, Weston & Mead. The mills had been established at Kniesly Station by Mr. Clark in 1840.

The succeeding year Mr. Mead bought out Washington Weston, and the firm was known as Mead & Weston until Joseph Weston sold out to Mr. Nixon. In 1872 the mill was incorporated, and in 1881 it became the Mead Paper Company, Mr. Mead buying Mr. Nixon out. The mill had previously been removed to the city.

Mr. Mead died president of the company which he had built up principally by his own splendid business tactics.

He was one of the organizers of the Merchants' National Bank of Dayton, founded in 1871, and became a director. In 1873 he became its president, and had been such ever since. He was one of the organizers and original directors of the First National Bank of Dayton, which was founded in 1863.

In 1870 Mr. Mead married a second time, taking for his wife Ella D., the sister of his deceased wife. By this wife he had two sons, D. E., Jr., and Joseph Weston Mead.

In 1867 he went into the organization of the Cooper Insurance Company, and was president of it for years. He was for years a director in other companies, and was one of the prime movers of the Dayton Southeastern Railroad, of which he was president for several years. He owned a great deal of real estate and was worth not less than $500,000.

Daniel E. Mead was a patriotic, public spirited and progressive citizen, a kind hearted and benevolent man. Possessed of these qualities in all their fullness, he was a leader among men and retained the respect which attaches to such a blending of qualities of mind and heart. He was the soul of honor, and in all his personal dealings and extended business associations his character was spotless and continually shown resplendent. Pertinacity of purpose at all times, guided and controlled by fixed rules of honest and rightful conduct, characterized his course in all his personal and business relations. It was by the simple following out on such lines that he reached the summit in all his undertakings. In the business and financial world few men ranked higher in the community in which he lived. He was at the head of an important paper making concern and a leading man in banking and insurance circles. All this he accomplished by patient industry aided by indomitable energy. As he reached and passed through the planes in the financial world he never lost his personality as a generous hearted man, but kept touch with friends and co-laborers in the struggle through life.

DONN PIATT.

At 3 o'clock on Thursday afternoon, the 12th inst., Col. Donn Piatt, one of the best known of America's literary journalists, died at his home, Macochee, in Logan County, Ohio. He had been ill for two weeks, but it was only in the last few days that his indisposition was regarded as at all serious. After Colonel Piatt's retirement from active journalistic work he resided quietly at his country place in Logan County. He was called from this retirement in 1888 to edit *Belford's Monthly Magazine* in New York. After one year at that work he returned to Ohio and engaged upon an extensive biographical history of Gen. George H. Thomas, which was almost completed at the time of his death.

His latest work for the press was a series of letters to the Cleveland *Plain Dealer* on the issues and candidates of the late campaign, which attracted wide attention. Colonel Piatt was born in Cincinnati June 19, 1819. He prepared for the law and was elevated to the Common Pleas bench at a very early age. As a journalist and editor of his paper in Washington—the *Capitol*—he gained a reputation that was world wide. Colonel Piatt was twice married, and his second wife—for many years an invalid—survives him. The funeral will be held to-morrow.

Henry W. Church, of the Little Falls Paper Company, Little Falls and Newburgh, N. Y., died at his home in the first named place on November 6, aged forty years. He leaves a widow.

Luther G. Riggs, publisher, Genoa Junction, Wis., is dead.

J. H. Cameron, secretary of the *Journal of Commerce* Company, publisher, St. Louis, Mo., is dead.

Personals.

Franklin Weston, the son and business associate of Hon. Byron Weston at Dalton, Mass., is now traveling in the Western States, attending to paper trade interests.

Alfred Leeds, of the Fairfield Paper Company, has returned to Fairfield, Mass., after an extended tour in the West.

A new style of hand made flock paper has been brought out, in which the fibres of wool or other textile material, being mixed with size and brought to suitable consistence, are modeled by hand on the provided ground. This work is on a light blue silk ground, the relief ornament, which consists of a running vine, rose and leaf, being in buff color. No extremely high or sharp finish is given to the raised work, which avoids the minuteness attaching to elaboration, presenting much the appearance of carving, the edges of the figures for the most part losing themselves in the ground. The specimen in question is in the highest style of art, its design being dexterously interspaced and producing a fine effect.

Market Review.

OFFICE OF THE PAPER TRADE JOURNAL,
FRIDAY, November 13, 1891.

THE MONEY MARKET.—Business in the stock market is only moderate in volume and most of the moving shares closed at fractionally lower prices. The loan market was steady in tone, the reduced volume of trading in stocks being reflected. Call loans on stock collateral were made at rates averaging about 4½ per cent., the extremes being 2½ per cent. and 5½ per cent. The close was at 2½@3 per cent. Time loaning rates were firm at 5 per cent. for periods up to four months, and 6 per cent. for longer terms. Commercial paper is in moderate request at the banks. Rates were as follows:

	Sixty days.	Four months.
Double named—		
First class	5½@6¼	5½@6¼
Good	6½@7½	6½@7½
Single named—		
First class	6½@7½	6½@7½
Good	7½@8½	7½@8½
Not so well known	8½@11	8½@11

The market for sterling was dull. Posted rates closed at $4.81 for sixty days' and $4.84 for demand. Rates for actual business were as follows: Sixty days' sight, $4.80¼@4.80½; demand, $4.84¾@4.84; cables, $4.84½@4.84¾; commercial, $4.78¾@4.79. Continental bills were quoted as follows: Francs, 5.24⅜ and 5.21⅞@5.21¼; reichsmarks, 94½ and 95⅛; guilders, 40¼ and 40½. Government bonds were quiet and steady.

THE PAPER TRADE.—From all quarters comes the story of low water, and with some mills the question is very serious. Some machines are shut down entirely and others are not making full time. In response to some calls for certain lots of paper, manufacturers are now exhorting customers to remember Job and "be patient." So far as business is concerned, there is considerable complaint in local circles that trade is not brisk, and yet most houses acknowledge that, comparing the volume of trade for the first ten months with the corresponding period of last year, the figures show a very encouraging advance. With some houses October was a "big" month, but with many it was not up to expectations. Writing and fine Book papers are in steady movement, and prices are regular. The large News mills are busy, and product is being very closely absorbed. Makers of Manillas are pondering considerably on the strong prices of jute stocks, and one Eastern maker has pushed his prices up one-quarter of a cent. Straw Wrapping is in very good call and values are very regular.

JUTE BUTTS.—The market is unchanged, spot being held firm at 1⅝c. and Calcutta at 1½c. There is no business to speak of, sales being limited to the movement of 100 and 200 bale lots.

WOOD PULP.—Supplies of Ground Wood continue limited. New engagements are not numerous and prices are nominally unchanged. We note sale Norwegian Dry, ex-store, at 1.40c.

WOOD FIBRE.—Domestic makers of Chemical Fibre are busy and mills running on Soda report a heavy demand. Foreign Sulphite is in fair movement. Domestic Soda Fibre ranges from 3¼@3½c. for Bleached. Domestic Sulphite is moving at 2.60@3c., as to quality, for Unbleached and 3½c. for Bleached. Foreign grades are quoted as follows: Unbleached Pine, soda process, 2.65@3.05c.; Bleached, same process, 3⅛@3.90c.; Unbleached, sulphite process, 2⅝@3.45c.; Bleached do., 3.90@4½c.; Bleached Straw Pulp, 4@4½c. Imports this week aggregated 407 tons, being 37 tons from Antwerp, 208 tons from Copenhagen, 90 tons from Hull and 72 tons from Rotterdam.

FOREIGN RAGS AND PAPER STOCK.—The market for foreign rags continues quiet. Linens are in small movement, and what inquiry there is is directed mainly toward low priced Cottons. We note sale of 500 bales Japanese Blues, ex store, at 1¾c., and other lots are held at 1.85c. There have been some sales of German Blue Cottons to Holyoke, but prices have not yet been made public. Imports for the week aggregated 12,898 bales and 407 tons, being 5,369 bs. rags, 137 bs. papers, 407 tons chemical fibre, and 7,392 bs. manillas. Ports of shipment and quantities are as follows: Antwerp, 37 tons chemical fibre, 835 bs. manillas; Bremen, 15 bs. manillas; Bordeaux, 206 bs. rags; Calcutta, 3,228 bs. manillas; Copenhagen, 156 bs. rags, 208 tons chemical fibre and 659 bs. manillas; Dundee, 607 bs. manillas; Havre, 156 bs. manillas; Hiogo, 1,863 bs. rags; Hull, 186 bs. rags, 90 tons chemical fibre and 576 bs. manillas: Leghorn, 637 bs. rags; Liverpool, 818 bs. manillas; London, 84 bs. rags, 137 bs. papers; Pillau, 1,693 bs. rags; Rotterdam, 46 bs. rags, 72 tons chemical fibre; Stettin, 498 bs. rags, 498 bs. manillas.

DOMESTIC RAGS.—Supplies are moving very steadily under contracts, but new business is only fair. Prices remain as they have been, say 3⅛c. for Whites, 2.30c. for Soiled Whites, 1¼c. for ordinary No. 2's and 90c. for Seconds.

BAGGING, &c.—The market for Gunny Bagging is quiet and there is no disposition manifested to do any business. We note sale 25 tons on spot between dealers at 1¼c., and the general quotation ranges 1¼@1.30c., but there is not enough business to fix values. We note sale 30 tons low grade mixed Bagging on spot at 90c. Ropes and Threads are quiet. Manilla imports for the week aggregated 7,392 bales, being 835 bs. from Antwerp, 15 bs. from Bremen, 3,228 bs. from Calcutta, 659 bs. from Copenhagen, 607 bs. from Dundee, 156 bs. from Havre, 576 bs. from Hull, 818 bs. from Liverpool and 498 bs. from Stettin.

OLD PAPERS.—There is a moderate trade. We quote: No. 1 Hard White Shavings, 3⅛@3¼c.; No. 1 Soft White do., strictly free from wood, 2.65@2.75c.; Soft White do., ordinary, 2½c.; Old Ledgers, 2½c.; Solid Printed Books, 1.40@1.50c.; Mixed Shavings, No. 1, 1.30@1.35c.; Mixed Shavings, No. 2, 1@1½c.; Extra No. 1 Manillas, 1.40c.; No. 1 Manillas, ordinary, 1.20c.; No. 2 Manillas, .90@1.05c.; Light Book Stock, 60@65c.; Folded News, 55@65c.; Commons, 40c.; Bogus Manillas, 60@90c.; Straw Clippings, 55c.; Binders' do., 50c.

STRAW.—The market is steady and fairly active. We quote: No. 1 Rye at 65@70c.; Short Rye at 45@50c.; Oat at 40@45c.

ROSINS.—Prices are very regular on a moderate amount of business. We quote in lots from the yard: Common to Good Strained, $1.57½@1.62½; E, $1.70@1.75; F, $1.85; G, $1.97½; H, $2.15; I, $2.35; K, $2.50@2.52½; M, $2.80; N, $3.45, and W. G., $3.95.

CHEMICALS.—There is a fair movement in paper makers' chemicals and prices are not materially changed. Under date of October 28 J. P. Brunner & Co. say of the Liverpool market: "The only article which seems to be attracting any attention at present is Chlorate of Potash, and heavy chemicals are quiet all around. Soda Ash is steady and minimum spot quotations are: Caustic Ash, 48 per cent., £5 6s. 3d. per ton; 57 to 58 per cent., £6 7s. 6d. per ton; Carb. Ash, 48 per cent., £5 9s. 9d. per ton; 58 per cent., £6 12s. 9d. per ton; Ammonia Ash, 58 per cent., £6 7s. 6d. per ton, all net cash. Special brands are held for a premium above quotations. Soda Crystals continue steady at £3 12s. 6d.@3 15s. per ton, less 5 per cent. Caustic Soda is flat, but quotations are unchanged, as follows: 60 per cent., £9 10s. per ton; 70 per cent., £10 15s. per ton; 74 per cent., £11 15s. per ton; 76 per cent., £12 15s. per ton, all net cash. A reduction of 7s. 6d. per ton on 60 per cent. and 10s. per ton on 70 per cent. and higher strengths will be made for contracts over 1892. Bleaching Powder in hardwood casks is in moderate demand at £7 15s. per ton, net cash, for all quarters except United States and Canada. Chlorate of Potash continues in active request and a large business done at 5⅜d. per pound, less 5 per cent." In Bleaching Powder there is some business doing in the way of contracts into 1892 at prices from 2.10c. up. Spot supply continues to be limited. English Sal Soda is scarce on spot, and prices are well sustained. Caustic Soda is dull on spot, but some contracts covering deliveries next year have been made. The demand for 60 per cent. is light, and for 74 to 76 per cent. it is only moderate. Alkali is moving more freely. During the week there have been sales of 150 cks. Bleaching Powder, spot, at 2.35@2⅜c.; 400 cks. Bleaching Powder to arrive at 2.15@2.20c.; 200 tons Soda Ash on spot at 1.60@1.70c.; 200 bbls. Natrona Porous Alum at 2½c.; 100 bbls. Ground Alum at 1.70c.; 100 bbls. Lump Alum at 1.60c.; 100 bbls. Keystone Alum at 1⅞c.; 10 cs. German Ultramarine at 17¾c.; 10 bbls. American Ultramarine at 12½c.; 100 tons 58 per cent. Alkali at 1.50c.; 100 drums 70 and 74 per cent. Caustic Soda at 3.07½c.

CHINA CLAY.—Potters' clays have shown a very satisfactory degree of activity for the season at prices ranging from $13@20 per ton. Potters seem to be buying rather freely in fact, possibly with a view to filling up stocks before the advent of cold weather. Paper makers' clays are fairly active at $16@18 as to brand, though some brands are still out of the market owing to the delay of the vessels referred to in our last.

TWINES.—There is a steady consumption of stock and prices are holding their own. Quotations are as follows: Cordage—Manilla Rope, half inch, 10½c.; Sisal Rope, half inch, 7c.; New Zealand Rope, half inch, 6¼c.; Jute Rope, half inch, 5½c.; Sisal Hay Rope, 6¾c.; Sisal Lath Yarn, fine, 6¼c., and medium, 5¾c.; Jute Lines, 5½@6c.; Jute Ready, 5¾@7c.; New Zealand Hay Rope, 6¼@7¼c.; New Zealand Lath Yarn, fine, 5½c., medium, 5c. Twines—Hemp, 4½ and 6 B Russia, 12c.; 4½ and 6 A American, 12c.; 4½ and 6 D Jute, 9c.; 4½ and 6 L Jute, 8½c.; Hemp Ball, 18 B C, 17c.; 18 C, 15c. Russian Hemp Hay Rope, 9c.

COAL.—At Chicago the anthracite coal market has changed little since last week. Bituminous coal is in good demand, and some of the larger country shippers have more than they can attend to with any degree of comfort. Milwaukee reports another week of mild weather, a further clearing up of old business, a light demand and no change in prices for hard coal. Soft coal is on the verge of a boom. At St. Louis soft coal has been in good demand, with prices steady. Anthracite can be bought at very near summer prices and there is no scarcity of cars or coal. At Boston the absence of cold weather retards the active demand for coal which would otherwise have set in before now. Dealers are replenishing their stocks slowly. At Philadelphia line trade is better than it has been for some time, but rather lags. At New York there is very little of importance to note. The heavy tonnage is the cause of much anxiety among some, but others who do not care for the future are content with the present.

EDWIN BUTTERWORTH & CO.,
MANCHESTER, ENGLAND,
PACKERS OF ALL KINDS OF
Paper Stock, Cotton Waste and Buffalo Sizing, Wood Pulp, Moist and Air Dry Pulp, Soda and Ground Pulp,
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JAMES PIRNIE, Manager.

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MANUFACTURED BY
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The Largest Manufacturers of Paper Makers' Felts in the World.
Adapted to *every* grade of paper, from the *finest* to the *coarsest*. Our wet machine or pulp felts are *unequaled for durability*. Every felt guaranteed to give satisfaction or may be returned.

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PRICES CURRENT.

NEW YORK MARKET.

Paper Market.

DEALERS' SELLING PRICES.

Ledger and Record	$0.18	@	$0.24
Flat Caps, superfines	14	@	17
Flat Caps, fines	11½	@	13
Flat Caps, engine sized	7½	@	9
Blotting, American	8	@	15
Blotting, English	17	@	....
Book, super sized and calendered	6	@	9
Book, super sized and tinted	6	@	7½
Book, extra machine finish	5½	@	6
Book, machine finish, low grade	5	@	5½
News, No. 1	4	@	4½
News, rag and wood	3¾	@	3¾
News, straw	4	@	5
Poster	3½	@	7
Hanging, superfine, No. 1	8	@	10
Hanging, superfine, No. 2	6	@	8
Hanging, macnine satin	4	@	4½
Hanging, white blank, No. 1	4	@	4½
Hanging, curtain	3¾	@	4
Hanging, brown	2¾	@	3
Colored papers, double mediums	6¾	@	8
Colored papers, glazed medium	7½	@	8½
Colored papers, tobacco	8½	@	9¾
Colored papers, tissues, 20×30, ℔ ream	1.10	@	1.35
Tissues, black, 20×30, per ream	1.40	@	1.50
White tissue, 20×30, ℔ ream	85	@	1.00
White tissue, 24×36, ℔ ream	1.30	@	1.50
Manillas, Flour sack, cream	10½	@	12
Manillas, Flour sack, drab	9½	@	11
Manillas, Rope, unbleached No. 1	9½	@	11
Manillas, Rope, unbleached No. 2	7½	@	9
Manillas, No. 1, light weight	6½	@	8½
Manillas, No. 1, heavy weight	6¼	@	6¾
Manillas, No. 2	5	@	6
Manillas, Bogus	2¾	@	3¾
Wrapping Parchment	16	@	20
Tissue Manillas, full count, weight and size, 24×36, other sizes in proportion	75	@	80
Hardware, light colored, No. 1	9	@	10
Hardware, No. 1, glazed, tarred	7	@	8
Hardware, No. 1, glazed	4½	@	5
Binders' Boards, ℔ ton, No. 1	70.00	@	80.00
Binders' Boards, ℔ ton, No. 2	40.00	@	50.00
Strawboards, air dried, No. 1, ℔ ton	45.00	@	....
Strawboards, steam dried, XXX, ℔ ton	31.00	@	32.50
Strawboards, steam dried, XX, ℔ ton	29.50	@	30.00
Strawboards, air dried, Penn., ℔ ton	35.00	@	....
Strawboards, air dried, State, ℔ ton	37.50	@	40.00
Straw Wrapping, basis, 15×20, 15½ lbs. 20 sheets—			
36×40, from 38 to 42 lbs. ℔ rm	90	@	....
30×40, from 30 to 34 lbs. ℔ rm	....	@	72
24×36, from 24 to 26 lbs. ℔ rm	....	@	65
22×32, from 24 to 26 lbs. ℔ rm	54	@	....
20×30, 21 lbs., ℔ rm	....	@	48
20×30, from 14 to 17 lbs. ℔ rm	36	@	....
16×22, from 12 to 13 lbs. ℔ rm	27	@	....
18×28	....	@	32
15×20, 10 lbs. ℔ rm	23	@	24
15×20, from 7 to 8½ lbs. ℔ rm	16	@	....
14×18	....	@	15
12×16	....	@	14
11×15	....	@	12
Straw Wrapping, ℔ lb., heavy weight	1.75	@	1.85
Straw Wrapping, ℔ lb., light weight	2¼	@	....
Cigarette Straw Tissue, per case of 100 boxes, 50 books to the box, 200 sheets to the book	31.00	@	50.00
Tea Papers, 16 sheet quires—			
12×18	18	@	20
14×20	22	@	....
Card Middles, ground wood	5¼	@	6¼
Card Middles, long fibre wood	8¼	@	9
Card Middles, rag and wood	6	@	9
Wood Fibre, bleached	3¼	@	3½
Wood Fibre, unbleached	3¼	@	....
Pulp Lined Boards, single manilla, No. 100 and heavier	42.50	@	....
Pulp Lined Boards, double manilla, No. 100 and heavier	47.50	@	....
L F B, Blue Linens	2¾	@	3
Gunny Bagging, No. 1	1.45	@	1½
Gunny Bagging, No. 2	1¾	@	....
C S P F F F, No. 1 Cottons	3½	@	4
C S P F F, No. 2 Cottons	3¼	@	3½
C S P F, No. 3 Cottons	2¼	@	2½
C C C, Colored Cottons	1¾	@	1¾
C F X, Low grade Cottons	1¼	@	1½
Extra Fine Blue Cottons	1¾	@	2

Woolen Rags.

Comforter Stock	8	@	9
White Woolens	9	@	10
Blue Gray Stockings	7	@	8
White Stockings	15	@	16
Blue Flannels	6	@	7
Reds, old	7½	@	8
Reds, new Shirt Clippings	20	@	21
Mixed Softs, free of Carpets	7½	@	8
Seamed Cloth	3½	@	4
Skirted Cloth	2½	@	3
New Cloth Clips	6	@	6¾
New Satinets, clean stock	2¼	@	3½
Satinets, old	1	@	1½
Seams	1½	@	1¾
Delaines, stripped for extract	2½	@	3½
Blankets, Woolen	2½	@	2¾
Wool carpets	4	@	4½
Mixed carpets	¼	@	....
White Linseys	3	@	3¼
Mixed Linseys	1½	@	....

Rags, Rope and Bagging.

White Shirt Cuttings, No. 1	6¼	@	6¾
Mill Assorted Whites	5	@	5¼
Unbleached Muslins	5½	@	5¾
City Whites, No. 1	3½	@	....
New Seconds, light	3¾	@	4
New Seconds, dark	3	@	3¼
No. 2, Whites	1½	@	1.70
Cotton Canvas, No. 1	3½	@	3¾
Linen Canvas, No. 1	....	@	3¾
Country White Rags	5	@	5¾
Country Mixed, free of Woolens	1¾	@	2½
Seconds (City)	1	@	1½
Colors, per 100 lbs	60	@	70
Manilla Rope	2½	@	....
Manilla Rope, tarred	....	@	2
Gunny Bagging, No 1	....	@	1¾
Gunny Bagging, No. 2	1¼	@	1½
Burlap Bagging, No. 1	1½	@	2
Kentucky Hemp Bagging	3¼	@	....
Tar Shakings	1¼	@	....
Hemp Twine Stock	3	@	3¼
Jute Waste	1¼	@	¾

Shavings and Old Paper.

White Collar Cuttings	2½@	....
White Envelope Cuttings	3½@	....
Hard White Shavings, No. 1	3½@	....
Soft White Shavings, No. 2	.... @	2½
Mixed Shavings, part white	1½@	1¾
Ledger and Writing	.... @	2¼
Solid Stock	1.60 @	1.65
Book Stock, No. 1, light	¾@	....
Old Newspapers	1¾@	....
Imperfections	1¾@	....
Colored Papers	2 @	2¼
Manillas, No. 1	.... @	1.60
Hardwares, No. 1	⅞@	1
Bogus Manillas	60 @	90
Commons	60 @	65
Binders' Board Cuttings	65 @	....
Strawboard Cuttings	60 @	65

English Rags, &c.

New Cuttings, cotton	5½@	5⅝
London Fines, cotton	3⅞@	4
Outshots, cotton	2⅞@	3
Seconds	1⅝@	1.65
Thirds	1¼@	1⅜
New Print Tabs	2¾@	3
Checks and Blues	2¼@	2¾
Light Prints	1¾@	2
Light Fustians	2 @	2¼
Dark Fustians	1¾@	1⅞
Black Calicoes	1¼@	1¼
First Canvas Linen	3¾@	4
Second Canvas Linen	3 @	....
Gunny Bagging, No. 1	1¾@	1 13-16
Gunny Bagging, No. 2	1¼@	1⅜
Burlaps Bagging, No. 1	1¾@	1.80
Rope, Manilla	2¾@	....
Rope, Manilla, tarred	.... @	2
Jute Threads	2 @	2¼
Clean Jute Ropes	2 @	2⅛
Mixed Rope	1½@	1½
Flax Tow	1¼@	1¼

English Old Papers and Shavings.

Hard Shavings, No. 1	3 @	....
Soft Shavings, No 1	2¾@	2¾
White and Colored Shavings, No. 1	1¾@	2
White and Colored Shavings, No. 2	1½@	....
Cream Post Shavings	2½@	2.81¼
Paper Collar Cuttings	3¼@	3¾
Briefs and Letters	2 @	2¼
Newspapers and Pamphlets, extra	1½@	....
Old Newspapers	1 @	1¼
Broken News and Letters	⅞@	1
Old Blank Books	2¼@	2½
Old Printed Books	2 @	2¼
White and Buff Railway Sheets	1½@	1⅝

Hamburg Rags, &c.

N S C, New Shirt Cuttings	5½@	5¾
S P F F F, No. 1 Linens	.... @	5¾
S P F F, No. 2 Linens	.... @	4½
S P F, No. 3 Linens	.... @	3¾
F G, No. 4 Linens	2¾@	3
F F, No. 5 Linens	2½@	2⅝
Extra Fine Blue Linen, light color	3 @	3¼

Leghorn Rags.

P P, No. 1 White Linens	5¼@	5¾
S S, No. 2 White Linens	4¼@	4¾
T T, No. 3 White Linens	3¼@	3¾
R R, Linen Stripes	3¼@	3¾
P C, No. 1 White Cottons	4¼@	....
S C, No. 2 White Cottons	3 @	3¼
T C, No. 3 White Cottons	2½@	....
R C, Cotton Stripes	2¼@	....
C C, Colored Cottons	2 @	....

Alexandria Rags.

Whites	1¾@	....
Blues	1¾@	....
Colors	1¾@	....

Japanese Rags.

Whites, ordinary	@	1¾
Blues, ordinary	@	1½
Blues, selected	@	1

Chemicals, Coloring Materials, &c.

Alkali, 48 ₱ cent	1.50 @	1.60
Alum, lump	1.60 @	....
Alum, ground	1.70 @	....
Alum, Keystone	1¾@	....
Alum, Diamond	.... @	2¼
Alum, pearl	2¼@	2¾
Alum, porous	2½@	2¾
Aluminous Cake	.... @	1¼
Anti-Chlorine	.... @	2¾
Bichromate Potash, American	.... @	10
Bleaching Powders, spot and to arrive	2¼@	2.20
Cambridge Ochre	11.25 @	....
Caustic Soda, 60 ₱ cent	.... @	3.12½
Clay, China, English, ₱ ton	12.50 @	17.00
Clay, China, "Star"	12.50 @	....
Clay, China, "Keystone"	10.75 @	....
Clay, South Carolina, ₱ ton	9.50 @	10.00
Clay, Terra Alba, French, ₱ ton	1.00 @	1.12½
Clay, Terra Alba, American, No. 1	95 @	1 00
Corn Starch	3 @	3¼
Copperas, American	.... @	80
Extract Logwood	9½@	....
Mineral Pulp	10.25 @	....
Orange Mineral	.... @	9½
Potato Starch	4½@	4⅝
Prussian Blue, dry	20 @	35
Prussiate Potash, American	.... @	24½
Rosins, common to good strained, ₱ bbl.	1.57½@	1.62½
Rosins, E, ₱ bbl.	1.70 @	1.75
Rosins, F, ₱ bbl.	1.85 @	....
Rosins, G, ₱ bbl.	1.97½@	....
Rosins, H, ₱ bbl.	2.15 @	....
Rosins, I, ₱ bbl.	2.35 @	....
Rosins, K, ₱ bbl.	2.50 @	2.52½
Rosins, M, ₱ bbl.	2.80 @	....
Rosins, N, ₱ bbl.	.... @	3.55
Rosins, W G, ₱ bbl.	.... @	3.95
Sal Soda	1.10 @	....
Soda Ash, caustic, 48 ₱ cent	1.60 @	1.65
Soda Ash, carbonated, 48 ₱ cent	1.55 @	1.70
Soluble Blue	40 @	55
Spanish Brown	½@	1
Sugar Lead, white	12 @	....
Sugar Lead, brown	7 @	....
Sulphate of Alumina	.... @	2½
Sulphuric Acid, 66 ₱ cent	1 @	1¼
Ultramarine, blue	12½@	17¾
Venetian Red	1 @	1¼
Vitriol, blue	5¼@	5½
Yellow Ochre Rochelle	1.35 @	1.50

BOSTON MARKET.

Paper Stock.

White Rags, No. 1	4¼@	4½
No. 2 Whites	3¼@	....
Common Seconds	2⅞@	3
Thirds and Blues	1¾@	2
Southern Mixed Rags	1¾@	1½
Colors, country	1 @	1¼
Colors, city	50 @	75
New Calicoes, light	2¼@	2¾
New Calicoes, dark	1¾@	2
Shirt Cuttings, best	5¼@	6
Shirt Cuttings, good	4½@	5
Shirt Cuttings, unbleached	5¼@	....
Shirt Cuttings, unbleached No. 2	3½@	4
Shirt Cuttings, cheviots	2½@	3
Overall Cuttings, blue	3 @	3¼
Overall Cuttings, brown	2½@	3
Shoe Rags, bleached	4½@	5
Shoe Rags, unbleached	4 @	4¼
Shoe Rags, brown	3 @	3¼
Cotton Flannels, bleached	4 @	....
Cotton Flannels, unbleached	4 @	....
Corset Rags, drab	3½@	3¾
Corset Rags, white	4¾@	5
Old Corsets	30 @	35
Tailors' Seconds	2½@	3
Tailors' Colors	40 @	50
Cotton Canvas	3¾@	4
Cotton Canvas, No 2	1½@	2
Linen Canvas	2½@	3
New Canvas Cutting	5½@	6
Insole Canvas	5 @	6
Print Papers, best	30 @	40
Print Papers, ordinary	30 @	....
Folded News	.... @	45
Old Waste Papers	20 @	25
Manilla Paper, No. 1	1.40 @	1.50
Manilla Paper, good mixed	75 @	1.05
Manilla Paper, blues	50 @	70
Mixed Book Stock	1.00 @	1.10
Books and Pamphlets	1½@	1.65
Book Stock, light	.... @	1
Ledgers and Letters	2¼@	2½
Soft Book Shavings	2¼@	....
Hard White Book Shavings	2¾@	3
Leather Board Chips	.... @	....
Straw Chips	50 @	60
Shivey Bagging	1½@	....
No. 1 Factory Bagging	1¾@	....
Burlap Bagging	.... @	1.35
Burlap Bagging, large pieces	1.65 @	1.75
Kentucky Bagging	1½@	1¾
Mixed Bagging	¾@	1
No. 2 Bagging	75 @	80
Shakings, soft	½@	1
Tarred Shakings	1 @	1¼
Standing Rigging	4¼@	....
Standing Rigging, foreign	3¼@	....
Bolt Rope	2 @	2½
Oakum Junk, No. 2	2½@	....
Tarred Paper Junk	1½@	....
Tarred Paper Junk, inferior	1 @	....
Manilla Rope	2¼@	2¾
Tarred Manilla	1½@	....
Hemp Strings	2¼@	....
Sisal Strings	.... @	1¼
Wool Strings	1½@	....
Flax Tow	¾@	1⅜
Flax Waste	¾@	1¼

New Papers.

Superfine Book	7 @	8
Fine Book	6 @	7
News, rag and wood	5¼@	6
News, No. 1, all rag	6 @	6¼
Manilla, Cream Rope	9½@	10
Manilla, No. 1, Rope	8½@	9
Manilla, Extra Jute	6 @	6⅛
Manilla, Jute and Gunny	5¾@	6
Manilla, No. 2	5 @	5¼
Manilla, Bogus	4 @	5
Hardware, No. 1, tarred	7½@	8¼
Hardware, No. 2	7 @	8
Hardware, red	5 @	6
Strawboards, air dried, ₱ ton	50.00 @	60.00
Strawboards, steam dried, ₱ ton	30.00 @	40.00
Straw Wrapping, heavy	1.90 @	2¼
Straw Wrapping, light	2¼@	2½
Binders' Boards, ₱ ton	53.00 @	60.00
Leather Board, Common, ₱ lb	3 @	4
Leather Board, counter	5 @	8
Leather Board, extra	8 @	10
Tar Boards, ₱ ton	100.00@	110.00

Chemicals.

Alkali	1.47½@	1.50
Aluminous Cake, currency	1¼@	1⅝
Alum, American ground	2 @	2¼
Alum, American lump	1¾@	2
Anti-Chlorine	3 @	3¼
Bi-Chromate Potash, American	10½@	....
Bleaching Powders	2.12½@	2.15
Blackley Blue	2.00 @	3.00
Caustic Soda, 70 ₱ cent. (for 60 ₱ cent.)	.... @	3
Clay, English, ₱ ton	14.00 @	18.00
Clay, American, ₱ ton	13.00 @	14.00
Copperas, ₱ lb	.... @	1
Extract Logwood	5¾@	6¼
Lime, Rockland, ₱ bbl	95 @	1.00
Prussian Blue, ₱ lb	50 @	60
Prussiate Potash, American, yellow	.... @	18½
Prussiate Potash, red	51 @	52
Rosin, common strained, ₱ bbl	.... @	....
Rosin, E	.... @	1.45
Rosin, F	1.50 @	....
Rosin, G	.... @	1.55
Rosin, extra pale	.... @	....
Sal Soda, English, ₱ lb	1.10 @	....
Soda Ash, 48 ₱ cent. caustic	.... @	1.55
Soda Ash, 48 ₱ cent. carbonated	.... @	1.60
Soluble Blue	55 @	65
Sugar Lead, white	12½@	13
Sugar Lead, brown	7½@	8½
Sulphuric Acid, 66°	1¾@	1¾
Terra Alba, ₱ ton	15.00 @	20.00
Ultramarine, ₱ lb	12½@	16
Venetian Red, ₱ lb	1¾@	1¾
Vitriol, Blue	5¼@	5¾
Yellow Ochre	½@	2

Wants and For Sale.

Twenty-five cents per line of eight words each insertion. No charge less than one dollar.

SITUATION WANTED—BY COMPETENT machinist and engineer; expert on all steam engines, boilers and paper machinery; kept a two machine mill going five years without the loss of a day. HUSTLER, care Journal.

WANTED—SITUATION BY A FIRST-CLASS machine tender; used to fast running. Address L. A., Care Paper Trade Journal.

WANTED—A 38 TO 44 INCH PAPER CUTter; self clamp. Address ROLLAND PAPER CO., St. Jerome, Canada.

WANTED—FOREMAN WELL UP IN STRAW boards and combination board making; must be well posted in every detail. Address, stating salary expected, CANADA, care Journal.

WANTED—A GOOD SECOND-HAND 75 horse power steam engine, automatic cut-off. Paper manufacturers or others having such an engine may find a purchaser by corresponding with the EMERSON MFG. CO., Lawrence, Mass.

WANTED—A FOREMAN FOR A TISSUE mill; also an engineer; must understand handling the different kinds of stock and be sober, steady men. Address TISSUE, Schaghticoke, N. Y.

WANTED—SITUATION FOR A MACHINE tender; also situation for an engineer; references first class. Address Lock Box 672, Holyoke, Mass.

FOR SALE—CHEAP, MANILLA MILL OR machinery in same, consisting of 62 inch machine, three engines and Jordan, all in first-class condition. Address B. W., care Journal.

FOR SALE—TWO 600 POUND BEATER ENgines with wooden tubs; in first-class order. Address BOWDOIN PAPER MFG. CO., Brunswick, Me.

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A ONE MACHINE PAPER MILL.

Now in operation; four cylinder molds, 94 inch face, and one wet machine; new buildings; latest improved machinery; 250 horse engine (made by Greene); 300 horse water power; two large reservoirs; 200 acres land, eight tenements; low freights; four and a half hours out, near station; cost over $100,000 three years ago; will be sold regardless of cost or present value to prompt purchaser.
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One Double Cylinder Paper Machine; two cylinder molds, 30 inches diameter, 76 inch face in vat, complete with screen, mixing box, &c.; first and second presses, each 12 inches dinmeter, 72 inch face, iron rolls; all in good order. The presses are complete with all stands and frames, and the machine makes 68 inches of finished paper; this machine is now running, but will be out of service soon, to be replaced by a wider machine. Address H., care Paper Trade Journal, 67 Federal street, Boston.

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A 68 inch Single Cylinder Paper Machine.
One iron Rag Engine.
Two sets Irons for wood tub Rag Engines.
One 60 horse power Steam Engine.
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Two Tubular Boilers, 60 inches diameter, 14 ft. long.
Two American Water Wheels, 42 and 66 inches diameter.
One Beloit Water Wheel, 50 inches diameter.
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Rock Maple Cogs on shortest possible notice. We make Cogs with blank head to be spaced and dressed after being driven; but make a **Specialty** of **Ready Dressed** Cogs, which are ready to run the moment driven and keyed. Send for circular.
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Four 100 H. P. Horizontal Tubular Boilers.
One 75 " " " "
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All in good order and ready to run.

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A 84 inch Harper Fourdrinier part, which was new three months ago and is in first-class condition; it is to be sold and replaced by a four cylinder part.

A set of eleven (11) 36-72 dryers, complete with frames, &c.

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One 68 in. Fourdrinier Paper Machine, consisting of gun metal couch and press rolls, sixteen 48 in. diameter dryers, two stacks chilled calenders, revolving reel, cutter, slitter, Manning winder, Marshall driving train, Gould screen.

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Two horizontal Gould refining engines.

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Large lot H. & S. pumps, from 2 in. to 10 in. discharge.

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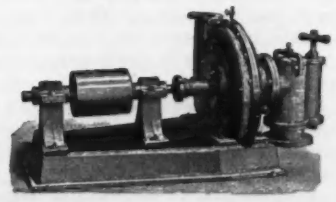
Cheap, durable and efficient.



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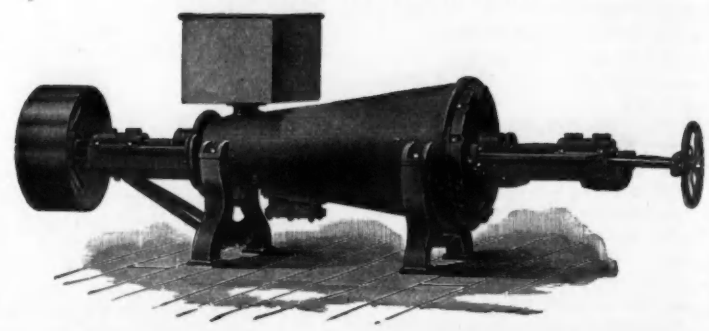

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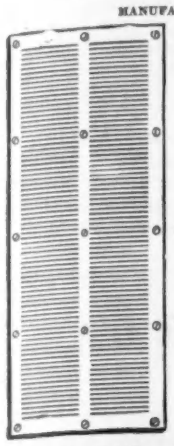

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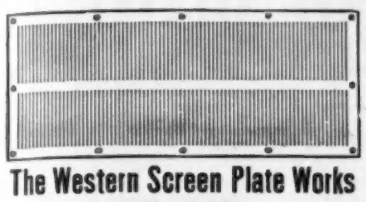

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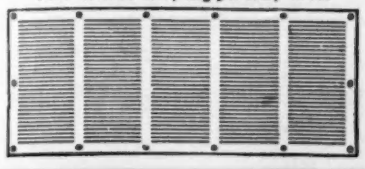

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EXHAUST FANS,

Adjustable Blades,

Self Oiling Bearings, with or without Steam Engine attached.

30 days trial. Fan Catalogue free.

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Three Different Machines

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A NEW PRINCIPLE APPLIED IN TESTING PAPER.

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Analyses carefully made. Advice on Chemical subjects given. Special attention paid to all matters connected with the Manufacture of Paper.

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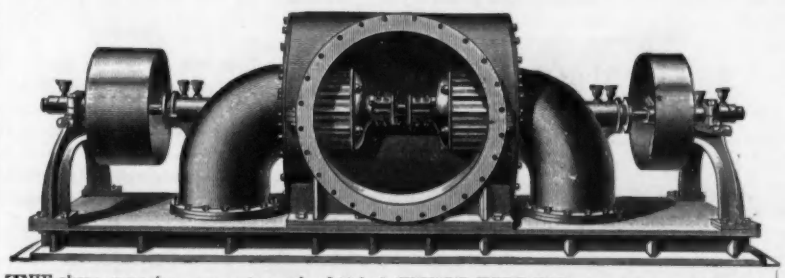
THE VICTOR TURBINE.



THE above engraving represents a pair of 12 inch **VICTOR TURBINES** arranged on a horizontal shaft, with Cast Iron Flume, Draft Tubes, End Bearings for Shaft, and Driving Pulleys complete, all mounted upon a substantial cast iron bed plate. The entire arrangement is very complete and strictly first class in every particular. We are now prepared to furnish Victor Turbines either single or in pairs on horizontal shafts and where the situation admits of their use we recommend them.

UPRIGHT or HORIZONTAL.

In use in a large number of best Paper and Pulp Mills in this and other Countries.

Possesses more than Double the Capacity of ordinary Water Wheels of same Diameter, and has produced the Best Results on Record, as shown in the following tests at Holyoke Testing Flume:

SIZE WHEEL.	HEAD IN FEET.	HORSE POWER.	PER CENT. OF USEFUL EFFECT
15 inch.	18.06	30.17	.8932
17½ inch.	17.96	36.35	.8680
20 inch.	18.21	49.00	.8532
25 inch.	17.90	68.62	.8584
30 inch.	11.65	52.54	.8676
35 inch.	17.29	138.19	.8497
40 inch.	16.49	148.93	.8253
48 inch.	15.51	179.29	.8202

Such results, together with its nicely working gate and simple, strong and durable construction, should favorably commend it to the attention of all discriminating purchasers.

THESE WHEELS ARE OF VERY SUPERIOR WORKMANSHIP AND FINISH.

THE VICTOR WHEEL is particularly adapted to setting on **HORIZONTAL SHAFT,** DISPENSING ENTIRELY WITH GEARS.

STATE YOUR REQUIREMENTS AND SEND FOR CATALOGUE TO THE

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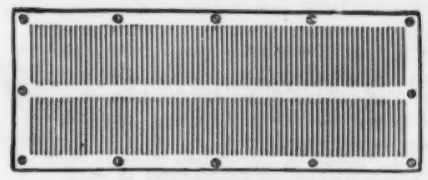

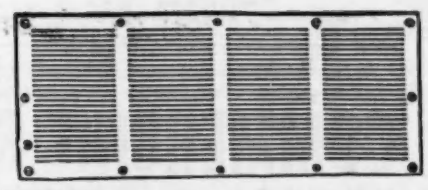

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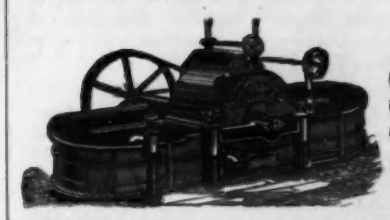

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An improvement in Washing Engines.

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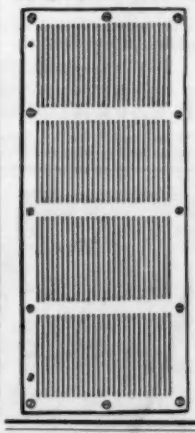

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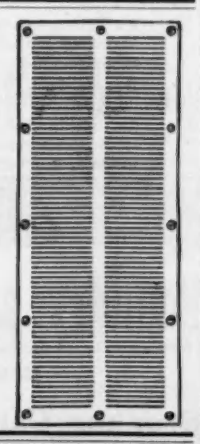

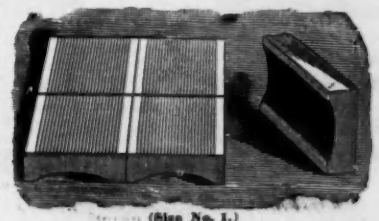

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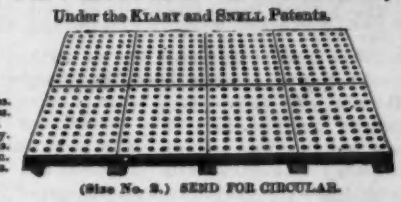

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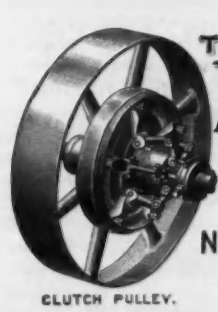

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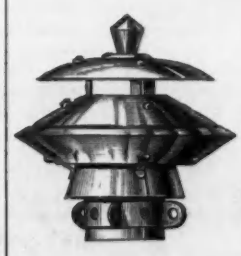

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IS THE BEST ONE MADE FOR DYE HOUSES, PAPER MILLS, AND ALL CLASSES OF BUILDINGS WHERE THOROUGH VENTILATION AND REMOVAL OF STEAM IS WANTED. PLEASE READ ACCOMPANYING TESTIMONIALS.

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Reardon & Ennis—Replying to yours of February 21, would say: We have been using your Ventilators for three or four months and think well of them. There was only one error we made in putting them in—we did not put in enough. Where they are stationed they carry off the steam, but we should have distributed them through our entire machine room at intervals. AMERICAN STRAW BOARD COMPANY.

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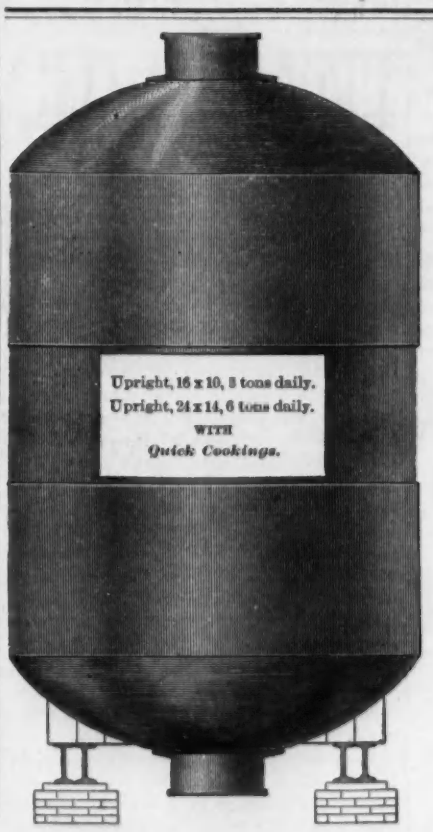
Reardon & Ennis—We have just received the large 36 inch Ventilator, which makes the fifth. They do good work, and we can recommend them for Paper Mill use or any similiar factory. LAWRENCE PAPER CO.

These Ventilators are in use on Ohio Paper Co.'s mill, Niles, Mich., and many others. For prices, &c., address the manufacturers,

REARDON & ENNIS, TROY, N. Y.



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Our Upright Digesters can be manufactured much cheaper than any other kind now in use, and have a capacity of 3 to 6 tons Air Dry Fibre.

Our Digesters are absolutely acid proof and require no repairs.

We invite investigation of our digesters, used continuously for more than four years, and refer to the Alpena Sulphite Fibre Co., Alpena, Mich.; Detroit Fibre Co., Detroit, Mich.; Michigan Sulphite Fibre Co., Port Huron, Mich.; Dexter Sulphite Pulp and Paper Co., Dexter, N. Y.; P. C. Cheney Co., Manchester, N. H.; the E. B. Eddy Manufacturing Co., Hull, P. Q., Canada; the Manufacturing Investment Co., of New York, mills at Madison, Me., and Appleton, Wis. Correspondence solicited.

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SIMPLE, RELIABLE, COMPACT, DURABLE.

NO OUTSIDE VALVE GEAR.

ADAPTED FOR ALL PURPOSES.

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Manufacturing News.

EASTERN STATES.

Three new dryers have been put on the machine of the Yantic Paper Company, Greenville, Conn., and other improvements have been made, so that the product of the mill is increased 1 ton per day. The mill is making a fine grade of manilla under the superintendence of R. S. Syms.

Guild & Wetherbee are building a paper mill at Bellows Falls, Vt., which is to be equipped with all the latest machinery.

Operations on the new paper mill of the Cushnoc Fibre Company, Augusta, Me., will begin soon. It is the intention of the present management to improve the whole plant as much as possible, making such changes as shall secure the largest production.

It is expected that the work of excavation will be commenced very soon for the foundation of the pulp and paper mills to be erected in Winslow, Me. Several buildngs will be put up and they will be very large, one of them being 400 or 500 feet long. As a matter of economy the pulp and paper mills will be in close proximity.

Extensive repairs are being made at the Umbagog pulp mill at Livermore Falls, Me. A brick wall is being built on the front and side nearest the road. The grinding machinery and water wheels will be new. A canal has been constructed. The capacity of the mill has been increased.

Some of the hands at the Copescook Mill, Gardiner, Me., have been laid off, and it is thought that as soon as a small order now on hand is completed the mill will be shut down on account of the very low water.

By January 1 the capacity of the paper mill at Lisbon Falls, Me., will be increased 125 per cent. The new building will consist of a large brick and stone structure, 150x75 feet, to be known as the wood pulp mill. The canal will be extended from a point just above the present canal, so as to allow the canal to carry an increased volume of water. This will supply six wheels. The improvements are being rapidly pushed forward. As a site for an enterprise of this kind the place is unexcelled.

The Otis Falls, Me., Pulp Company has contracted with Borough Brothers, of Portland, to erect a two story paper mill at Otis Falls, Jay. The ground was broken on Monday of last week for the foundations.

The Falulah Paper Company, of Fitchburg, Mass., is doing an extensive business. In 1886 it took possession of the old scythe manufacturing plant in South Fitchburg. The next year the company began to make manilla papers. In 1890 a commodious new building was erected. The plant is furnished throughout with the finest and latest improved machinery from the paper machines themselves, which were built by Howe, of the power plant, which is by water and steam also. The engines employed are a 120 horse Brown and a 60 horse Fitchburg. The facilities of the plant have lately been much improved by the establishing of a siding track by the Fitchburg Railroad Company. The mill employs thirty-five hands, runs night and day, and produces at present 16,000 pounds of paper per diem.

A Westinghouse engine has been set up at the plant of the Ramage Paper Company at Monroe Bridge, Mass.

It is stated that B. F. Brown, the proprietor of the pulp mill at Garvin's Falls, N. H., will erect a building on the northwest corner of his lot 24x30 feet and two stories high.

Carver's Falls, Vt., has lately been surveyed for the purpose of ascertaining the exact fall, estimated at 25 feet for the upper dam and 60 feet for the lower dam, so that the power can be determined. The uses that the water will be put to depend altogether upon the power which can be adopted.

The Piscataquis Falls Pulp and Paper Company, Montague, Me., in writing to the Ohio Stone Company, Cleveland, Ohio, makes use of the following language after a trial of one of the "Peninsula" pulp stones: "If the mill were equipped fully with stones such as the one we are now running we would surprise the natives."

Machinery is being put into the new pulp and paper mills at Groveton, N. H., and it is expected that they will be started up in December.

MIDDLE STATES.

The New York and Pennsylvania Paper Company is putting machinery in its mill at Johnsbury, N. J. The company expects to start up the mill this month.

The Chasm Mill at Ausable Chasm, N. Y., belonging to the estate of Chas. W. Rich, has been leased to F. G. Parks, who will make straw wrapping and bogus manilla.

The Hudson River Pulp and Paper Company, Palmer's Falls, N. Y., has started up its bisulphite fibre mill.

The Remington Paper Company's new mill at Watertown, N. Y., will start up about December 1.

The paper mill company at Carthage, N. Y., is building a saw-mill.

WESTERN STATES.

The Ohio Stone Company, Cleveland, Ohio, recently shipped four "Peninsula" pulp stones to the Denver Paper Mills Company, Denver, Col.

The Moline Paper Company's mill at Moline, Ill., has been shut down, and it is understood that it will remain closed all winter and perhaps longer.

An attempt was recently made to blow up with dynamite the paper mill dam at Monticello, Ind.

The Fuji Paper Company, Tokio, Japan, recently ordered three "Peninsula" pulp stones from the Ohio Stone Company, Cleveland, Ohio, with instructions to ship two via New York and Suez Canal and the other by way of San Francisco. The order was shipped as directed last week.

The paper mill at Palmyra, Mich., has been shut down for repairs. A stone foundation is being put under the entire building, and about $4,000 worth of new machinery is being added to the already fine equipment. An addition of 30 feet is also being made to the building, making it 240 feet long and as finely an equipped mill as there is in the State.

The Akron Woolen and Felt Company, Akron, Ohio, after running a night force for some months during the summer, recently added new machinery, which will materially increase the output of the mills, and at the same time with these added facilities a higher grade of paper makers' felts will be offered to the trade.

SOUTHERN STATES.

The people of Spartansburg S. C., are confident that the plan of erecting a paper and pulp mill at that place will prove a success.

A mill has been projected at Galveston, Tex., for the manufacture of paper pulp from the hulls of cotton seed.

New pulp grinders will be placed in the Dupont Paper Mill Company's plant at Louisville, Ky.

The people of Monroe, La., are trying to secure the location at that place of a paper pulp mill to make pulp from cotton seed hulls.

Toning Blue Prints.

The intense blue color of the ordinary blue print gives unnatural effects in prints from photographic negatives; also in architectural drawings where views and elevations of buildings are reproduced. The following method of toning such blue prints has been found to be easy of application and to give tones varying from a brilliant blue through violet blue to neutral tint and warm shades of gray, according to the intensity of the action of the bath.

The paper employed may be common blue print paper, sold ready for use in rolls, or the specially made paper sold in packages of cut sheets by the dealers in photographic supplies. The solar printing is carried out in the usual manner. The best results are obtained with dark prints, as the intensity of the color is somewhat reduced by the toning process. The following baths are employed:

BATH A.

Muriatic (hydrochloric) acid	3 to 4 drops.
Water	16 oz. (1 pint).

BATH B.

Aqua ammonia	5 to 10 drops.
Water	16 oz. (1 pint).

BATH C.

	Apoth. weight.
Alum	2 oz.
Tannic acid	1 drachm.
Water	16 oz. (1 pint).

The prints are immersed face downward in bath A until all the soluble salts contained in the paper are dissolved and removed, then dipped into bath B until the negative turns a violet blue and the whites are clear, care being taken that the immersion in the ammonia be not continued too long, as the definition of the picture may be injured. The prints are transferred from the ammonia bath, placed face upward in a tray filled with bath C, and exposed to bright sunshine for from five to ten minutes, until no increase in the strength of the picture can be noticed. The pictures are finished by toning in bath B until the desired shade of color is obtained, the picture becoming first a brilliant blue, then violet, and finally, by prolonged action, bluish gray or neutral tint. The toning may be varied by a second immersion in the tannic acid bath C, followed by a second toning in bath B. After toning, the prints are dried in the sunlight in the usual manner.

The above process is specially applicable to prints from photographic negatives, enabling the amateur in the field, provided with a printing frame, some sheets of prepared blue print paper and the above easily procured chemicals, to test the printing quality of his negatives with results only slightly inferior in detail and definition to those obtained by the complicated process of silver printing.

General Notes.

As black radiates more heat than any other color, it has been suggested that boiler fronts should be painted white.

It is reported in the *Kokkai*, a Japanese official print, that the silver yen struck off by the Osaka Mint for the Hongkong and Shanghai Bank, and handed over to the bank at a recent date, was to the value of $3,750,000.

Leather belting which has been used for some time will, when taken off from its place or pulleys, and allowed to lie idle, require to be stretched pretty tight when again put in use. Even then, in a few days of running, it will be found to stretch so much as to require to have a piece cut out and a new lacing made. If the face of a pulley becomes bright and smooth it shows that the belt slips.

A stagnation in the paper trade of Scotland is reported. One of the Midlothian mills, which was burned two years ago, has not been rebuilt nor has there been any encouragement to do so. Floods in the Esk Valley last month caused losses to paper manufacturers of upward of £30,000, and a firm which operated three mills has given up business.

The entertainment and ball of the Brotherhood of Paper Makers held on Friday evening, November 6, at the City Hall, Holyoke, was a very pleasant and enjoyable affair. In the entertainment which preceded the dance the several artists engaged acquitted themselves creditably and to the delight of the audience, encores being the order of the evening. The grand march was led by Peter Gammie and wife, followed by about two hundred and twenty-five couples, most of whom remained to dance the entire programme. Among those present were: Mayor Griffin, City Clerk O'Brien, Ex-Alderman Sullivan, Superintendent Wm. Reardon, of the Albion Paper Company; Superintendent French, of the Valley Paper Company; E. B. Fiske, of the Chemical Paper Company No. 1; Samuel Sill, N. S. Burt, Miss Penman, of Fife, Scotland; Edward Outterson, Mr. and Mrs. Hugh McLean, the Misses Bertha Regan, Kittie Reynolds, Annie Kelly, Maggie Lorralla, Josie O'Hara and Mrs. P. H. Kelly.

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In ordering, mention kind of stock used, quality of paper made and speed of machine.

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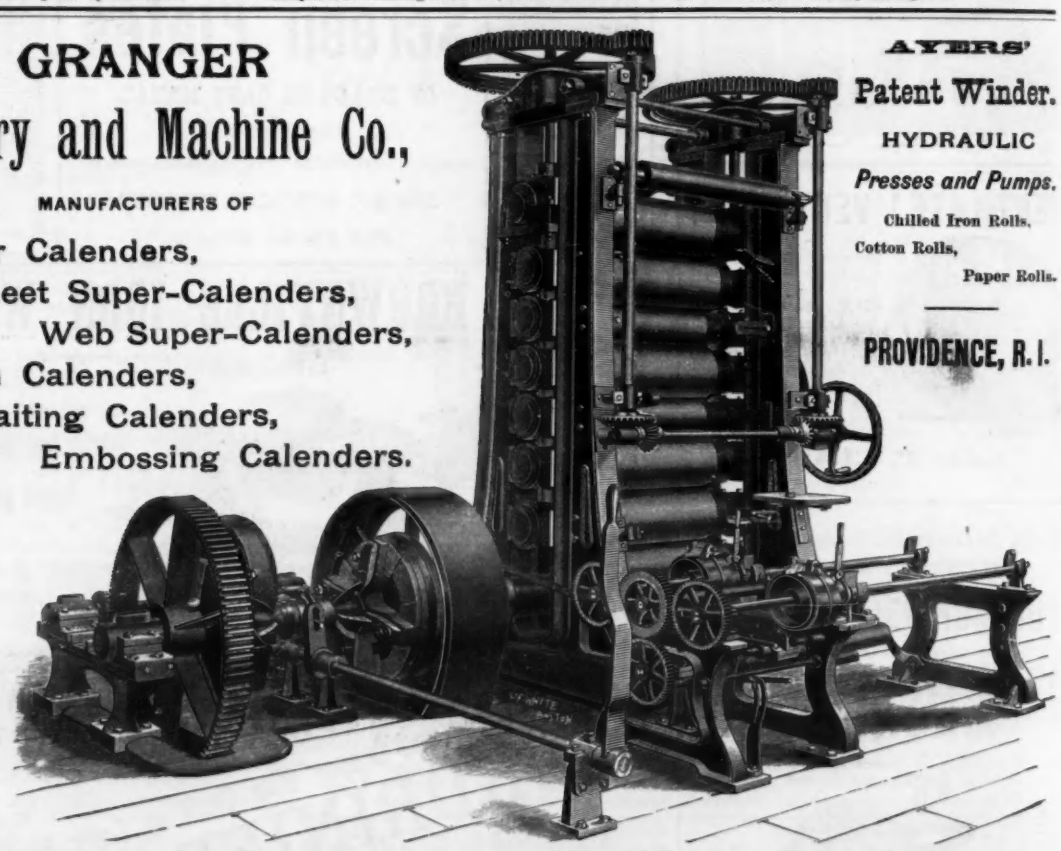

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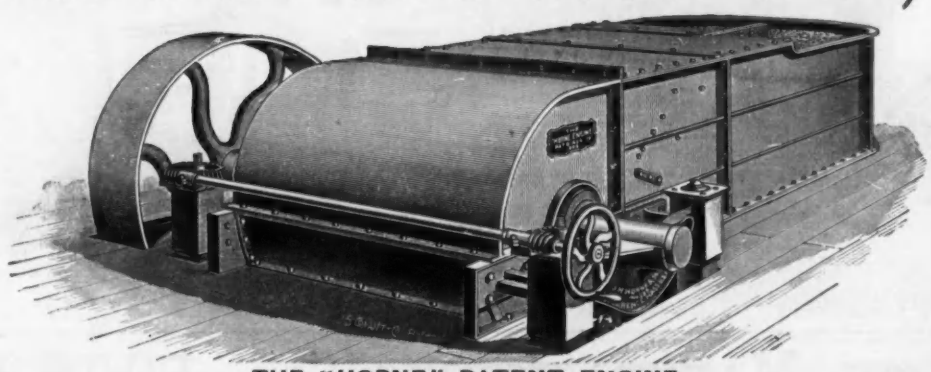

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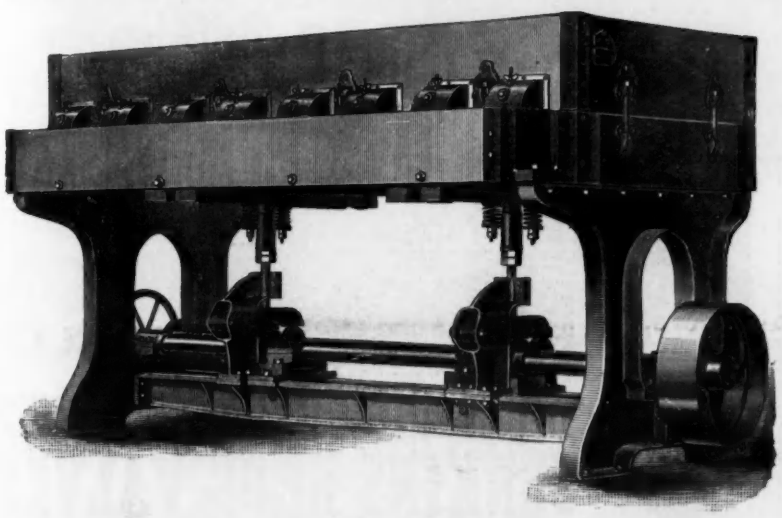

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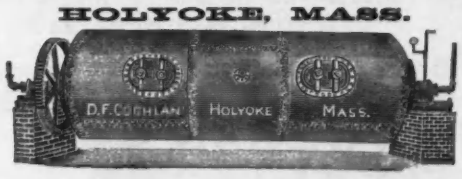

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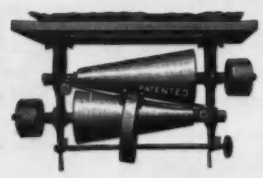

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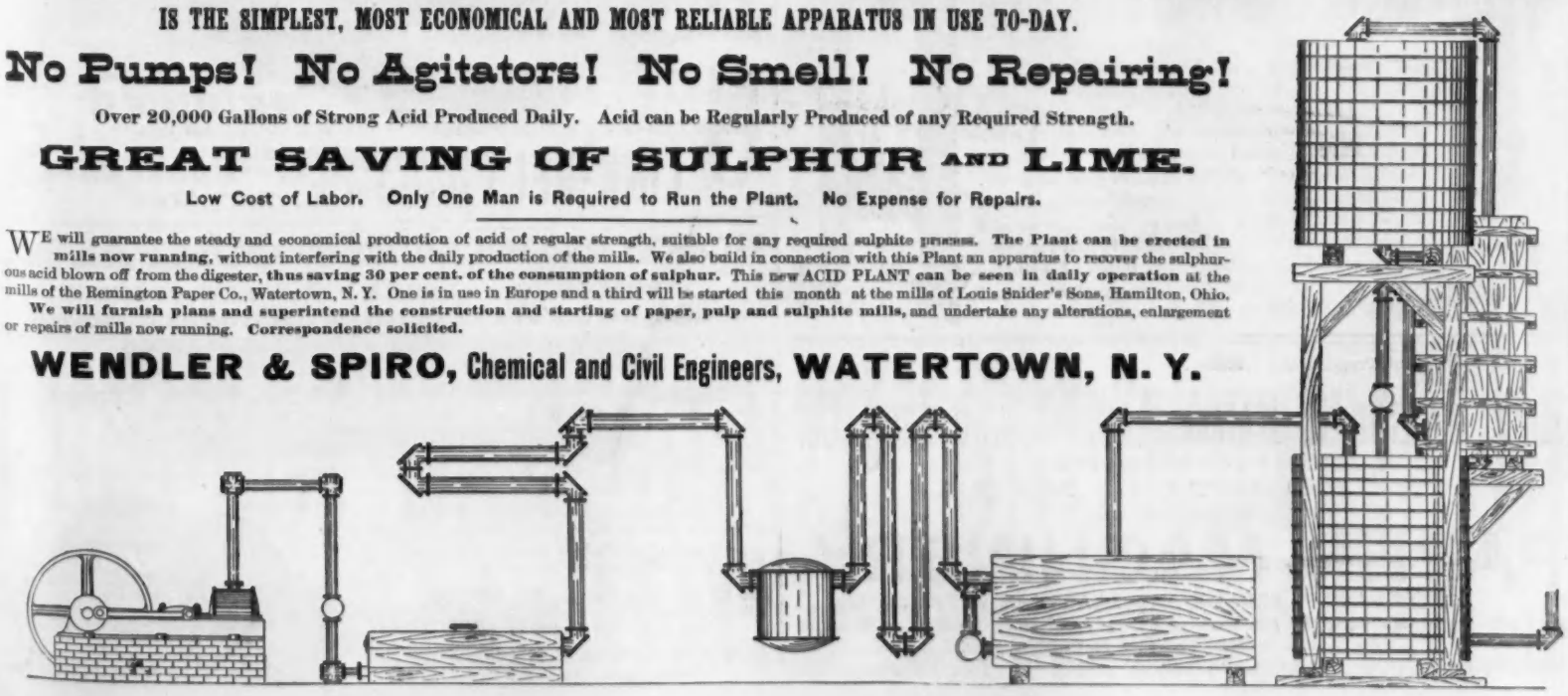

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Long and Short Haul Clause of Interstate Commerce Act.—Where a violation of the long and short haul clause of the interstate commerce act is sued upon the fact that the rate sued upon was made jointly by the defendant and another road not a party to the action has no effect upon the liability of the company sued, but to establish the violation the shipper must show that the higher rate for the shorter distance is for like services under substantially similar conditions and circumstances.—*Junod v. Chicago and Northwestern Railroad Company, Circuit Court of the United States, Southern District of Iowa, 49 Fed. Rep. 290 (99).*

Validity of Partnership Settlement.—Where copartners who have had differences arising out of their joint business voluntarily and at arm's length enter into a written contract dissolving their partnership relations, and by its terms make full and detailed arrangements for a separation and a division of their joint property, and provide fully for the payment of the firm debts, in the absence of allegation and proof to the contrary all of such differences will be presumed to have been merged and adjusted by the contract of dissolution. In the absence of proper allegations and proof that such contract was obtained by duress or fraud, or was entered into under a mistake of fact, such contract will not be set aside on the sole ground that one of the parties did not read the same or know the contents before it was signed.—*Little v. Little, Supreme Court of North Dakota, 49 N. W. Rep. 736 (146).*

Receipt on Payment by Note.—The acceptance of a note "for," or "on account of," or "in payment of," an existing debt, in the absence of an express agreement or understanding that it is taken in satisfaction or discharge of the debt, is to be understood and interpreted as a conditional payment only. The mere recital in a receipt or other writing of the fact of payment by note is not by itself sufficient evidence of absolute payment, and that the creditor assumes the risk of its being paid, but is upon the implied understanding that the note will be paid, and shows that when paid it shall be a discharge of the original debt.—*Combination Steel and Iron Company v. St. Paul City Railway Company, Supreme Court of Minnesota, 49 N. W. Rep., 744 (131).*

Voluntary Assumption of Risk by Employee.—A boy was employed to work at one machine and was by the foreman transferred to another which was used for cutting. He was placed there to clear away. He subsequently undertook, without instructions or order, to feed the machine, and his fingers were caught by the knives. He voluntarily assumed the risk and cannot hold the employer liable for the consequences.—*Leistritz v. American Zylonite Company, Supreme Court of Massachusetts, 28 N. E. Rep. 94 (279).*

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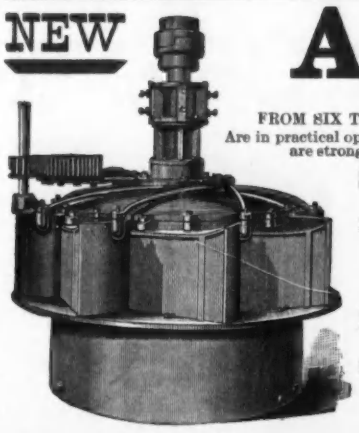

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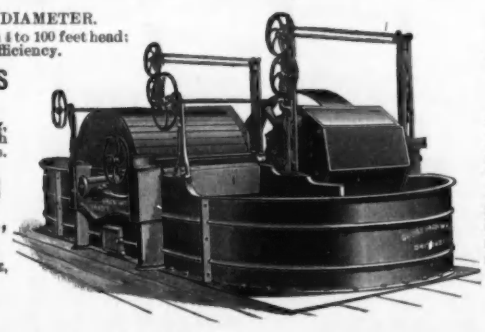

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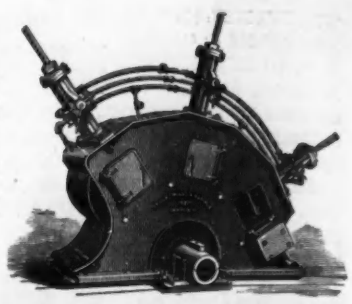

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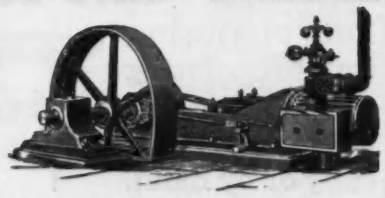

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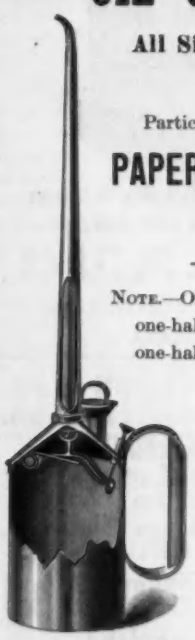

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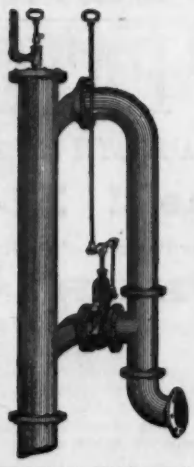

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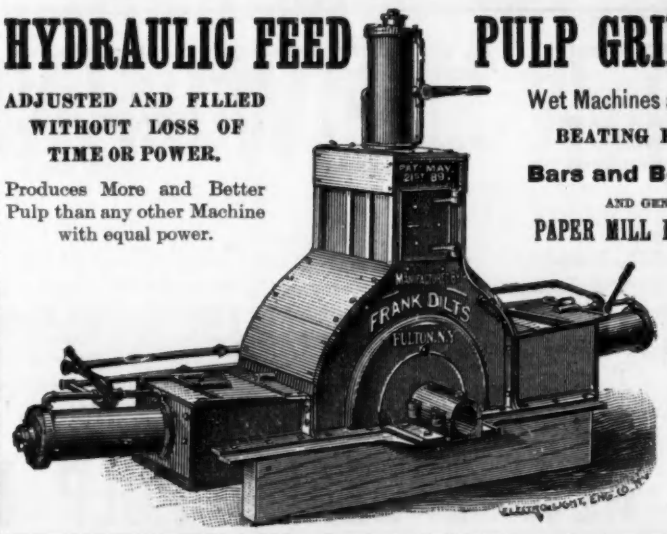

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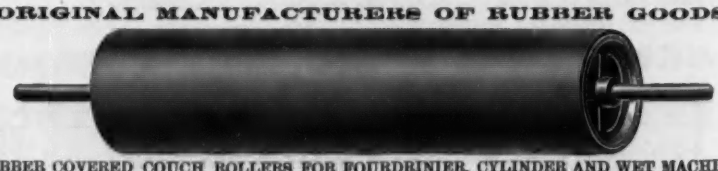

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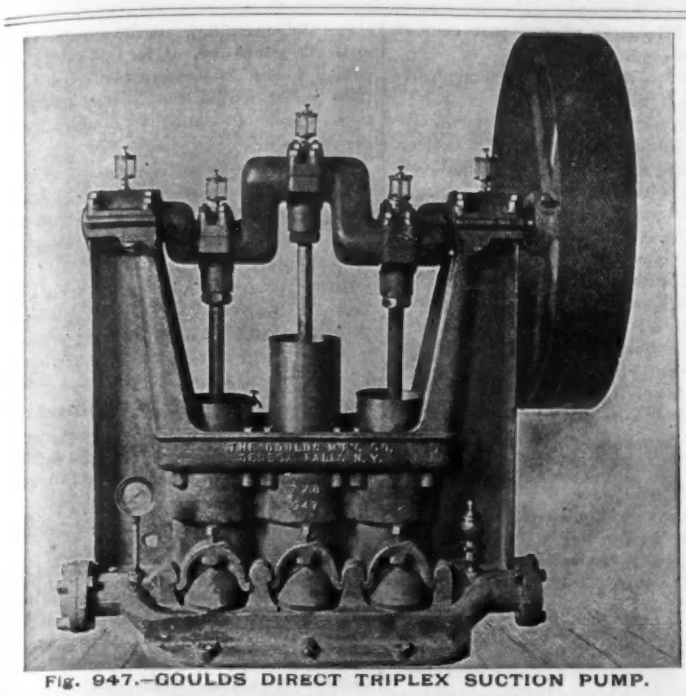

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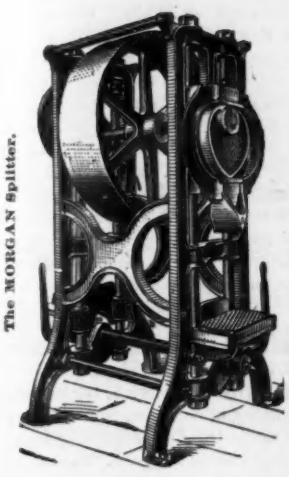

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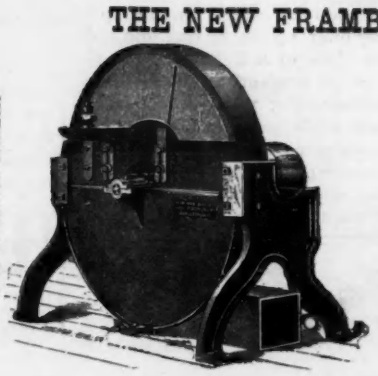

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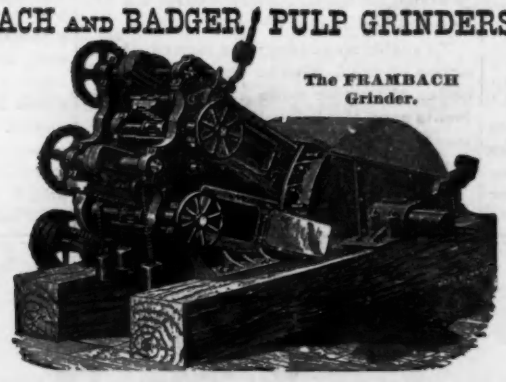

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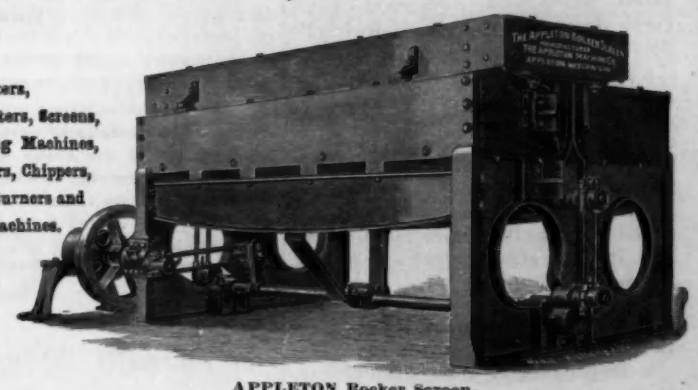

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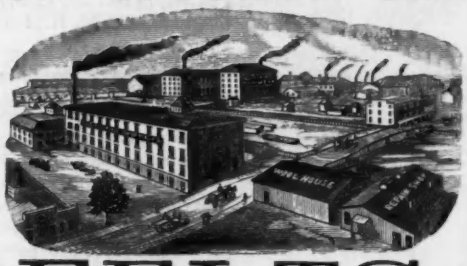

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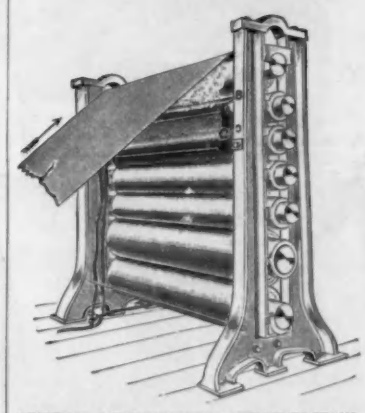

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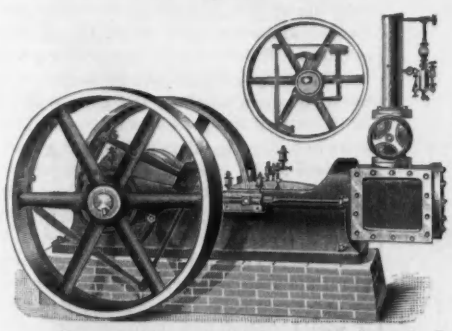

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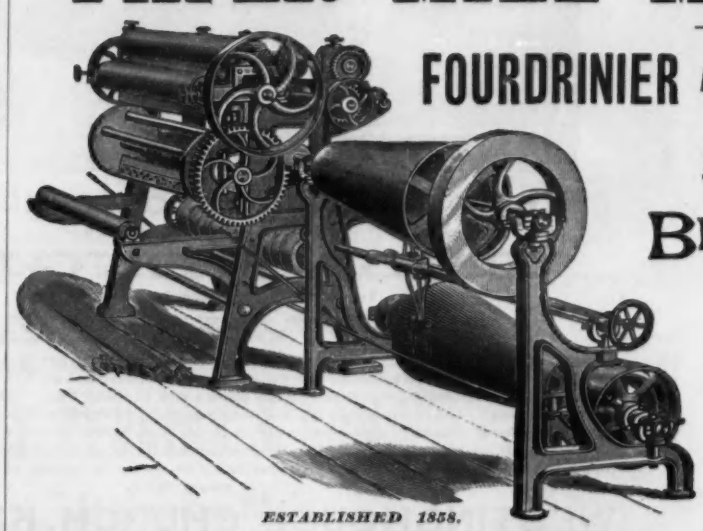

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(Continued.)

STONE.

Although stone is an admirable material to use for constructional and architectural purposes, it does not resist the action of fierce heat so well as might be imagined, and very soon either cracks, shells or calcines, according to the nature of the material. After the great fires at Chicago, at Boston and at Paris, during the Commune, it was noticed that the limestones were calcined, the fronts of buildings in many cases being entirely burnt away, leaving the brick backing standing several floors in height. The granite sometimes exploded, flying off in fragments, or slowly disintegrated to a fine sand, and where the heat was not very intense, merely cracked and scaled off. The sandstones stood the heat best, on account of the large amount of silica in the composition; but it was simply a question of time, for in many cases they were either cracked or disintegrated. The same results have been observed by the author after many of the large fires in London, Manchester, Liverpool and elsewhere. To form an approximate idea of the comparative capabilities of the different stones to resist intense heat the author made a number of experiments, in which he was assisted by Thomas Morris, works manager of Dallam Forge, Warrington. Cubes of the following stones were obtained:

1. Syenite, from North Wales, used more for paving sets than for building purposes.
2. A porphyritic granite, containing large crystals of feldspar, from the quarries in Westmoreland, largely employed for building purposes.
3. A carboniferous limestone, resembling marble, from the Derbyshire quarries, compact and fine grained, used for building purposes.
4. Portland oolite.
5. Sandstone grit, from Darley Dale, Derbyshire.
6. Sandstone grit, from Bramley Fall, Yorkshire.

The above samples were in rough cubes, having about 5 inch sides, with the exception of the Welsh syenite, which had 4 inch sides only. They were arranged about 5 inches apart in a row, upon a wrought iron plate and placed diagonally across the floor of a large heating furnace, each stone thus receiving the same amount of heat simultaneously. The temperature of the furnace when they were first inserted was not taken by means of a pyrometer, but judging from the color of the sides and bottom it was about 2,400° Fahr. It gradually cooled down to about 2,000° Fahr., when they were removed nine and one quarter minutes afterward.

According to the experiments of Pouillet, made with an air thermometer having a platinum bulb, the following are the colors corresponding to the various temperatures:

	Degrees Centigrade.	Degrees Fahrenheit.
Dull red	700	1,292
Incipient cherry red	800	1,472
Cherry red	900	1,652
Clear cherry red	1,000	1,832
Deep orange	1,100	2,012
Clear orange	1,200	2,192
White	1,300	2,372
Bright white	1,400	2,552
Dazzling white	1,500 to 1,600	2,732 to 2,912

The door of the furnace was left partly open to enable the action of the heat on the blocks to be seen. In one and one-quarter minutes the Welsh syenite cracked with a slight explosion and gradually broke into shelly fragments, most of which showed the usual conchoidal fractures. The Westmoreland granite was the next to fail, a large corner breaking off in one and one-half minutes; it afterward cracked and crumbled to small fragments. The limestone commenced to calcine at the corners, and in about two minutes began to split up and crumble, the small pieces becoming calcined. The Portland stone stood apparently intact for about three minutes, but a slight tap with an iron rod broke it into pieces, which commenced to calcine. The Darley Dale and the Bramley Fall stones stood the heat intact for about four minutes, when they commenced to scale and shell off. A small crack appeared in the Bramley Fall stone in about two minutes, but the other part remained firm for about four minutes. The stones were withdrawn at the end of about nine and one-quarter minutes, although their natural properties had been destroyed fully five minutes before. The above tests were no doubt very severe, for in the first place it would be impossible for the six sides of a stone in an ordinary structure to be exposed simultaneously to heat, and in the next place the stones were comparatively small and the intense heat was applied suddenly. The experiments, however, showed conclusively that granites are the least and sandstones the most refractory of the stones, but that none of them possess the property to a high degree, fully indorsing the opinions formed after the great fires referred to. It was intended to quench the stones with water upon their removal from the furnace, but the heat alone had been sufficient to destroy them.

* From *Iron Age*.

BRICK.

The fire resisting properties of brick have been fully demonstrated in the many conflagrations in this and other countries. When almost every other material had perished the brickwork remained intact. This property depends chiefly upon the amount and proportion of silica and alumina contained in the clay from which the brick is made, and also upon the amounts of oxide of iron, lime, magnesia, potash, water, &c., which are present in small and varying quantities. The greater the proportion of alumina to silica, the greater is the infusibility of the clay, and an excess of oxide of iron and of the alkalies—which act as fluxes—renders it less refractory. It is the proper combination of the various constituents which makes special bricks suitable for particular requirements.

As the more refractory bricks are not so strong for constructional purposes, special combinations of the above materials are made to produce the blocks and bricks of the fireproof floors described hereafter. Quenching the heated bricks with water does not appear to affect either their subsequent fire resisting qualities or their strength, although in one or two cases when single heated bricks have been plunged into water cracks have developed. The expansion of fire brick due to the application of heat is 0.000002349 for 1° Fahr. Therefore a 10 foot length of floor or wall raised to a temperature of 2,000° Fahr. would expand 0.56 inch, or about one-third the amount of expansion of a bar of iron under similar circumstances. The average weight required to crush a Stourbridge fire brick is about 50 tons applied to the flat side of a brick 9.08 inches long by 4.4 inches broad by 2.47 inches thick, which is equivalent to 1.3 ton per square inch.

CONCRETE.

Many of the fireproof floors are now constructed of concrete of various materials, either in the form of arches or with flat ceilings, built in situ or in slabs. Although a certain material may withstand the action of fire satisfactorily, it is important to know what will be the effect upon it of water when in a heated state, for in a conflagration these two elements have to be contended with, and very often water causes the more disastrous effects. It may be mentioned that at the great fire at Lynn on November 26, 1889, when buildings covering an area of 40 acres were destroyed, the water used would have flooded the whole space to a depth of over 7 feet; and at the great fire at Boston on November 28, 1889, sufficient water was poured upon the structures to cover the site to a depth of 12 feet 7 inches.

To enable some idea to be formed of the action of fire and water upon various concretes, the author made a series of experiments upon test briquettes of various mixtures, as follows:

1. Ten briquettes of neat cement.
2. Ten briquettes of one part cement, one part sand.
3. Ten briquettes of one part cement, three parts sand.
4. Ten briquettes of one part cement, five parts sand.
5. Ten briquettes of one part cement, four parts iron works slag.
6. Ten briquettes of one part cement, four parts broken fire brick.
7. Ten briquettes of one part cement, four parts pumice stone.
8. Ten briquettes of one part cement, four parts coke breeze.
9. Ten briquettes of one part plaster of paris, four parts pumice stone.
10. Ten briquettes of one part plaster of paris, four parts broken fire brick.
11. Ten briquettes of one part plaster of paris, two parts fire brick.
12. Ten briquettes of one part plaster of paris, two parts iron works slag.

The briquettes were of the form usually adopted for testing cement, and the tests were made in the Bailey cement testing machine in the laboratory of University College, Liverpool, Prof. H. S. Hele Shaw, M. Inst. C. E., having kindly placed the use of the machine at the author's disposal. As the stresses to which the various concretes are submitted in an actual structure are very similar to those met with in ordinary engineering works where cement is used, the author felt justified in only applying such a tensile test as is usually adopted in the case of cement. Five briquettes of each set were tested at a normal temperature of about 60° Fahr.; the other five were carefully heated on the top of a specially built up fire of coal and coke until they were of a light red heat, the average time of exposure to the heat being about five minutes; they were then removed, and while hot were quenched with water. A large number of the briquettes lost all cohesive power after being quenched, and it was with difficulty that they were removed intact; as they could not in this state withstand any tensile strain, they were allowed to dry. After three days' exposure to the atmosphere of a warm room they partly regained cohesion, and were then tested. Following is a summary of the results:

Breaking weight per square inch at temperature of 60° Fahr., pounds: 1. 554.6; 2. 448.0; 3. 100.8; 4. 74.6; 5. 108.01; 6. 84.4; 7. 94.58; 8. 69.9; 9. 66.8; 10. 57.4; 11. 223.3; 12. 167.5.

Breaking weight per square inch after being heated and quenched, pounds: 1. 117.2; 2. 93.0; 3. 18.7; 4. 15.0; 5. 23.06; 6. 30.5; 7. 38.3; 8. 39.06; 9. 10.3; 10. 3.4; 11. 6.9; 12. 15.7.

Average loss per cent. of original strength after heating and quenching, per cent.: 1. 60.8; 2. 80.0; 3. 81.4; 4. 79.8; 5. 69.3; 6. 50.9; 7. 59.5; 8. 57.1; 9. 75.0; 10. 94.7; 11. 96.8; 12. 90.0.

None of the above proportions are those adopted by the maker of any particular flooring, but they are such as to yield a good concrete under ordinary conditions, and are sufficient to enable an opinion to be formed of the strength of certain materials in combination, and of their value in fireproof construction. The quenching test was a severe one, for it is hardly possible to have a floor heated to such an extent throughout and so quickly quenched as these small briquettes were; but, although it may be contended that the conditions were not parallel with those obtaining in a building on fire, much can be learned by induction from the results. The face of the fracture of all the heated and quenched briquettes made with plaster of paris was very characteristic. Many other concretes are used by different makers of fireproof floors, some containing asbestos, silicate cotton, &c., but with these the author did not make any experiments.

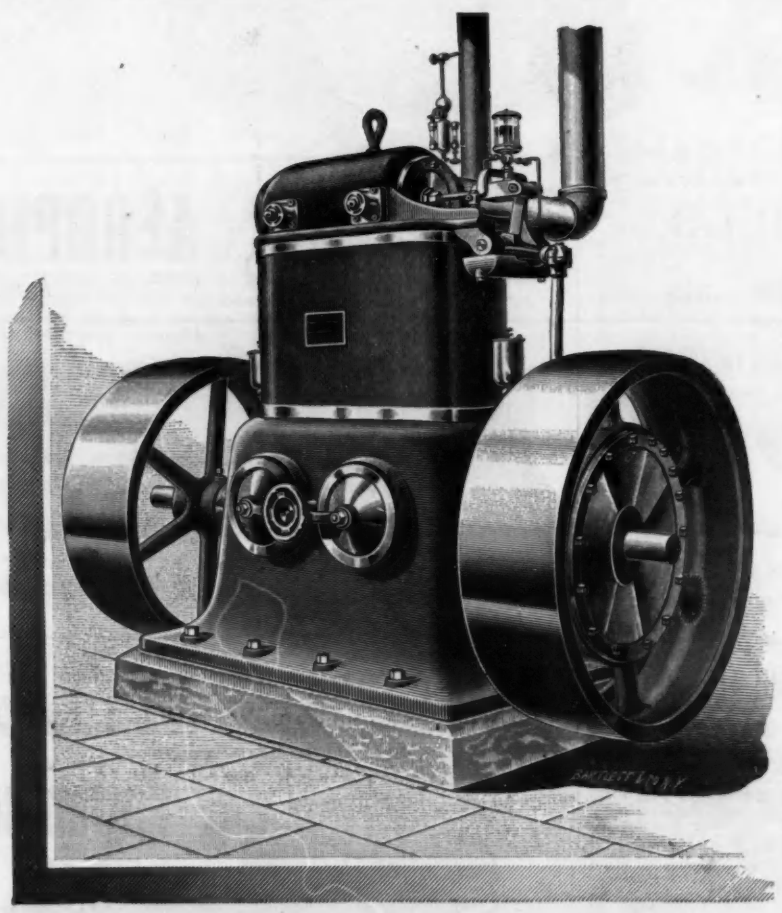
TERRA COTTA.

This material, when great strength is not required, is often used in fireproof construction, especially in America, for partitions, ceilings, lining of columns, furring of walls, &c. It is made from a special clay found in several localities in England. The red clays contain about 8 or 10 per cent. of oxide of iron, which renders the operation of burning difficult; the shrinkage is also unequal and uncertain, but is partially overcome by mixing different clays and adding ground pottery, glass and sand, &c. A porous terra cotta is made by H. Maurer & Son, of New York, which appears to be free from the foregoing disadvantages, while retaining its fire resisting properties. It is composed of clay and sawdust or shavings, tan bark, charcoal, &c.; after being thoroughly mixed it is subjected to an intense heat, which consumes all the combustible substances, leaving the brick porous. As this material admits of nails being readily driven into it, it is well adapted for partitions, ceilings, &c.

PLASTER.

The fire resisting properties of calcined gypsum, commonly called plaster of paris, have long been known, the builders in Nottinghamshire and Derbyshire, where the stone is found in abundance, having used this material for flooring for nearly three centuries. Gypsum is a native hydrated sulphate of lime, the finest qualities being termed alabaster, and when transparent, selenite. Plaster of paris is made by gently calcining gypsum until nearly the whole of the moisture is expelled, and then grinding it. The plan adopted by the Nottinghamshire and other builders is to mix the coarse powder into a paste, and throw it on the top of the wooden joists, reeds or laths to the depth of 9 or 10 inches, when in a few hours it sets. Gypsum is the basis of most plasters, and has good fire resisting properties, but if not protected or strengthened by wire or other methods subsequently described it would fail under the action of water thrown upon it during a conflagration. There are several cements and plasters mixed with other materials which certainly increase their fire resisting qualities. Among them may be mentioned those made by Hitchens, Robinson & Co., the Cyanite Company, and by Allen & Merritt, the latter being an American invention, and consisting of silicate of magnesium mixed with powdered flint, caustic potash and silicate of soda, and which it is stated will withstand the action not only of heat, but of water also.

(To be continued.)



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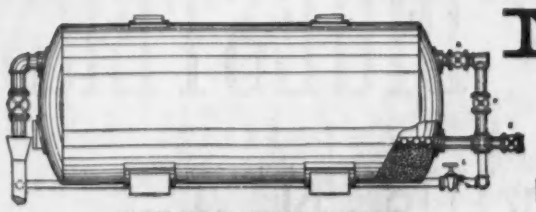

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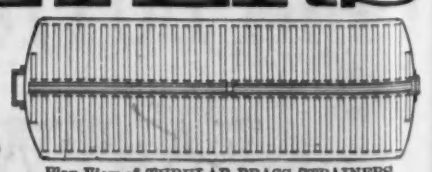
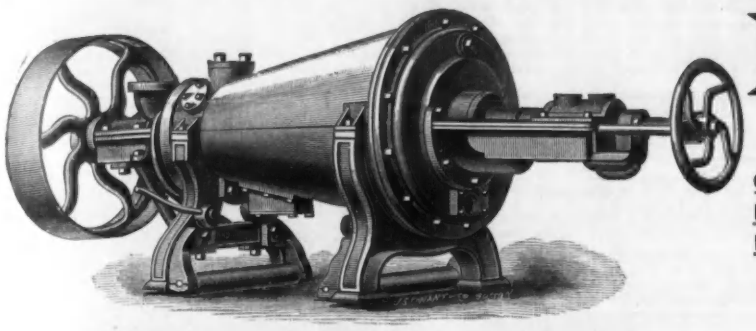


Plan View of TUBULAR BRASS STRAINERS in bottom of Horizontal Filter.



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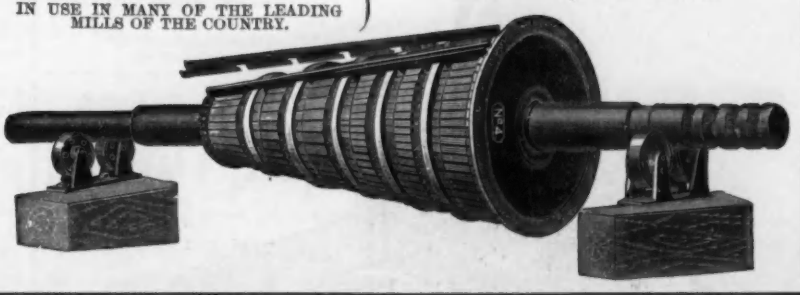

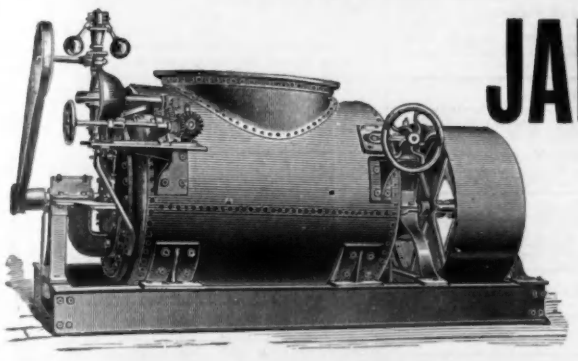

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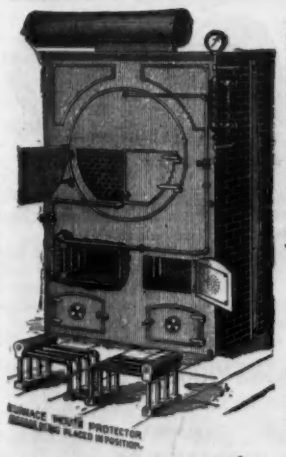

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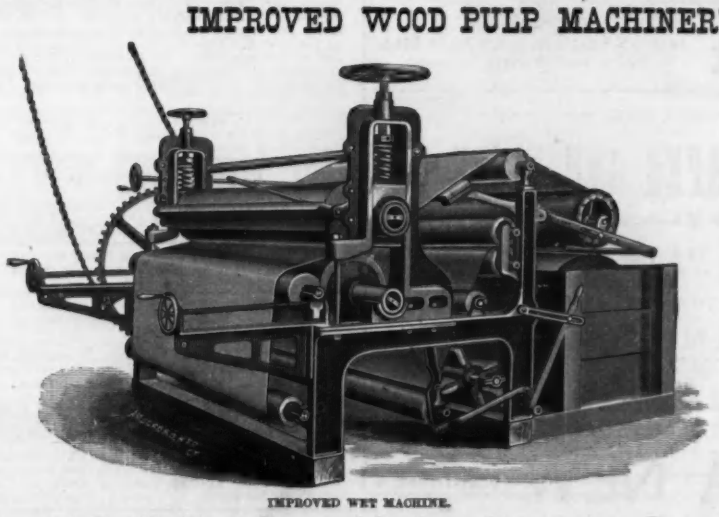

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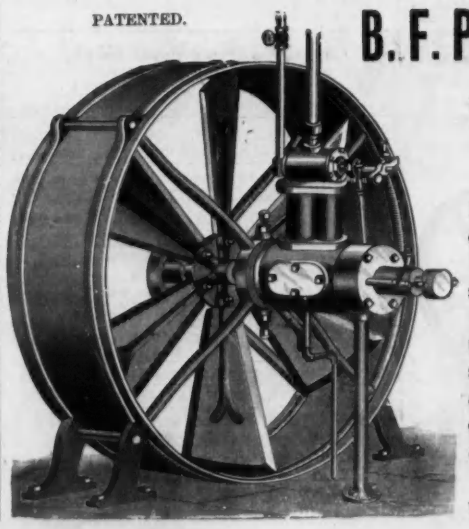

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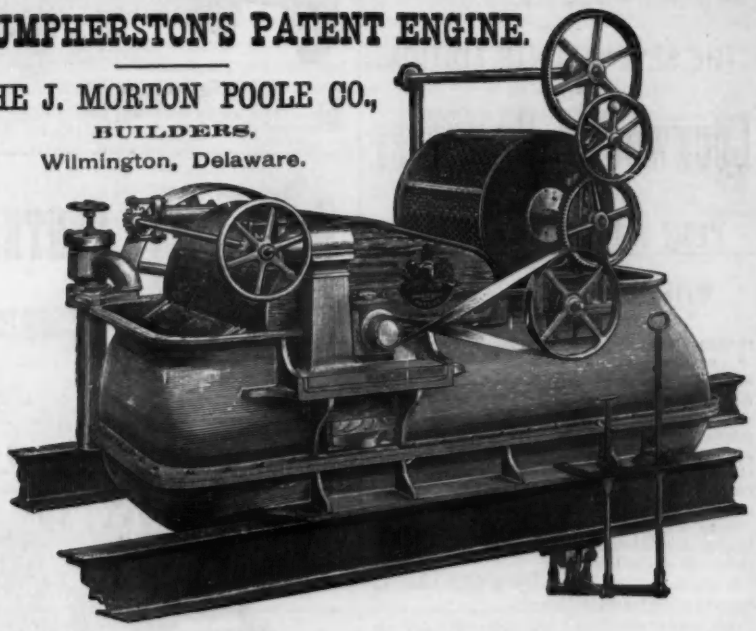

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The "Defiance" Envelope Machine.

In the factory of the Burdick Envelope Company at Buffalo, N. Y., there are ten of the "Defiance" envelope machines in use. In general appearance these machines are much like the "Leader," which was controlled and operated by the envelope combination, but in essential points they possess novelty of action and construction which make them differ from all other machines. This is especially the case in the device used for gumming the open or sealing flap. This device consists of a peculiarly constructed box for holding the gum, having an automatic lip on the underside so arranged that the advancing column of blanks will cause the box to open and spread the gum on the tip or sealing flap of the envelope, and as each blank is pulled from under the lip it spreads on evenly and to the outer edge any required quantity of gum. This method of gumming should be of great advantage to printers, as the gum is put on clean and even and there is no ridge of gum along the inner edge to cause loss of type or electros, or waste of time in opening up the seal flaps and closing them again when printed. This is a very important point for printers and well worth noting.

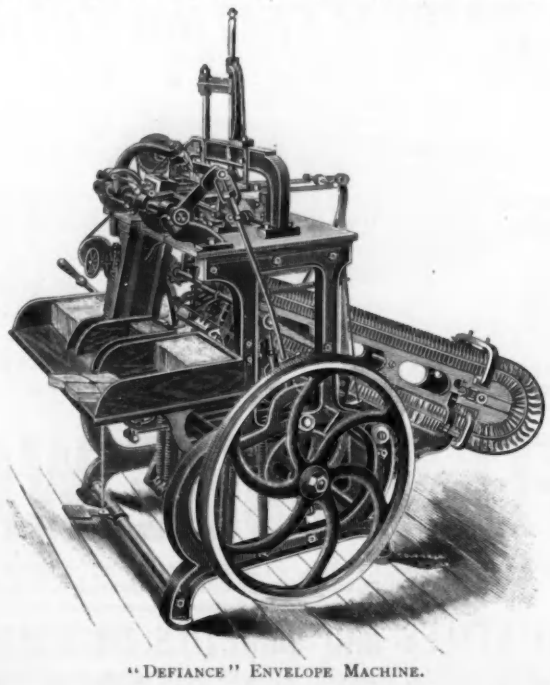
The blanks are placed in an elevator so constructed that the operator can lower it by pressing on a foot treadle, leaving both hands free to put in more blanks as required, a good point possessed by this machine alone, saving time and trouble. The patent overfeed elevator is a very simple device which carries up the pile of blanks against the picker and gum dish lift; it is automatic, each stroke of the picker placing the blanks in their proper position. The machine takes up the blanks from the advancing pile, gums both flaps, forms them into an envelope, dries, delivers, and counts envelopes in twenty-fives, ready to band, at an average speed of eighty-five per minute, or 40,000 to 50,000 per day.

The machines are well and strongly built, and are made under the care of competent experts who have had long experience at this class of work. The peculiarity of the seal gummer is the fact that it will gum cockled paper as evenly and truly as that which is flat; this is an important point. It will also make envelopes of any degree of "swell" for eighth, quarter or half thousands.

The number of "Defiance" machines sold during the past year and the increasing demand for them are good evidence of their worth.

Comparing with non-gumming machines one "Defiance" will, it is asserted, do as much work as two of them and a gumming machine and helper combined, one machine with one operator doing the work of three machines and four hands. The annual saving in wages alone would thus soon buy a machine. It is also noted that the "Defiance" has strong financial backing.

This machine is made by E. W. Blackhall, Buffalo, N. Y.



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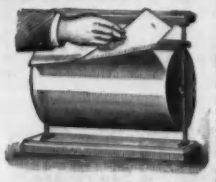

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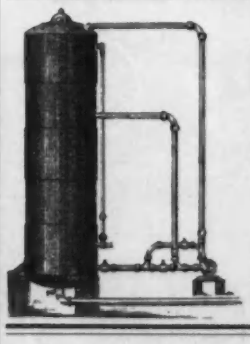

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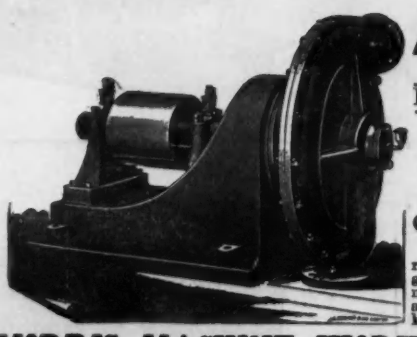

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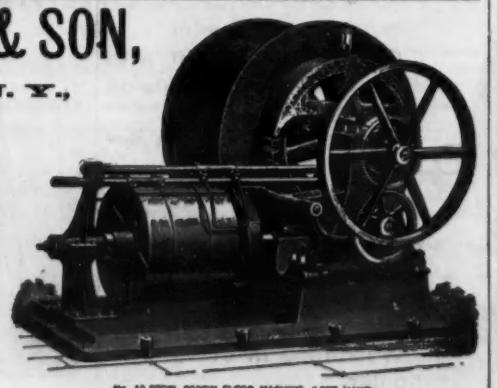

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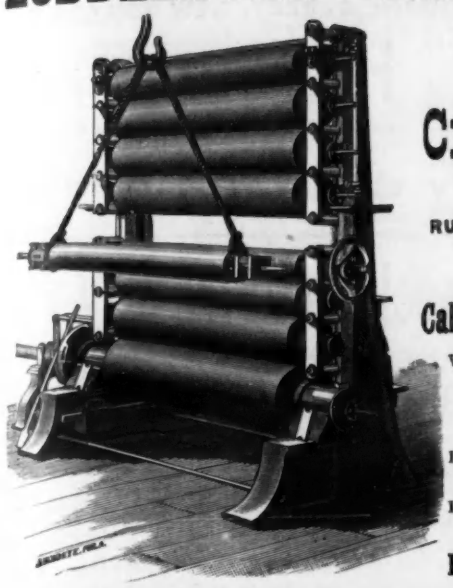

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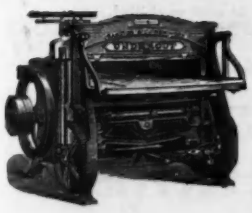

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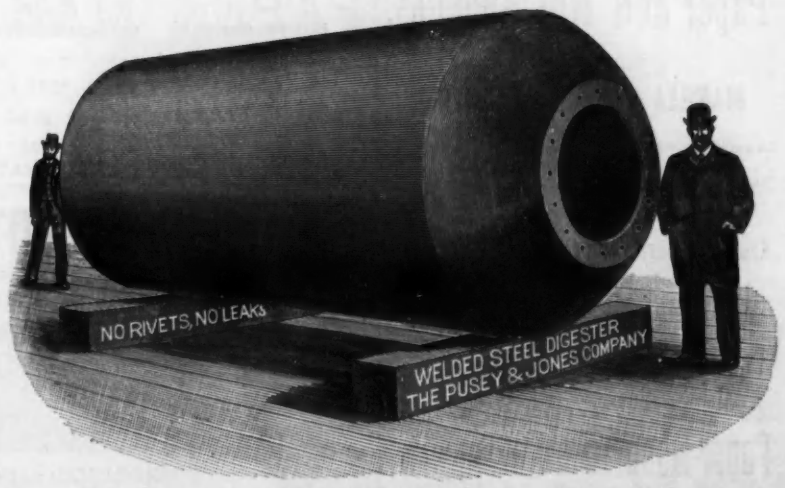

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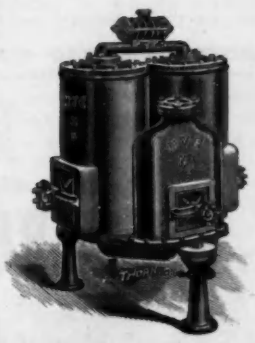

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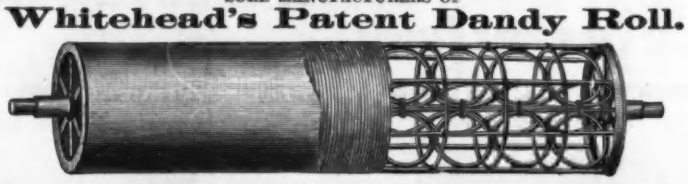
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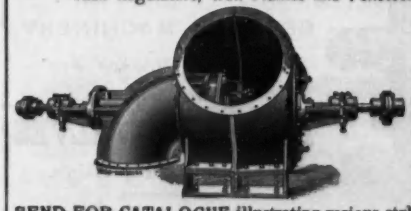
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